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"The South African Mines, Commerce & Industries."

ESTABLISHED 1891

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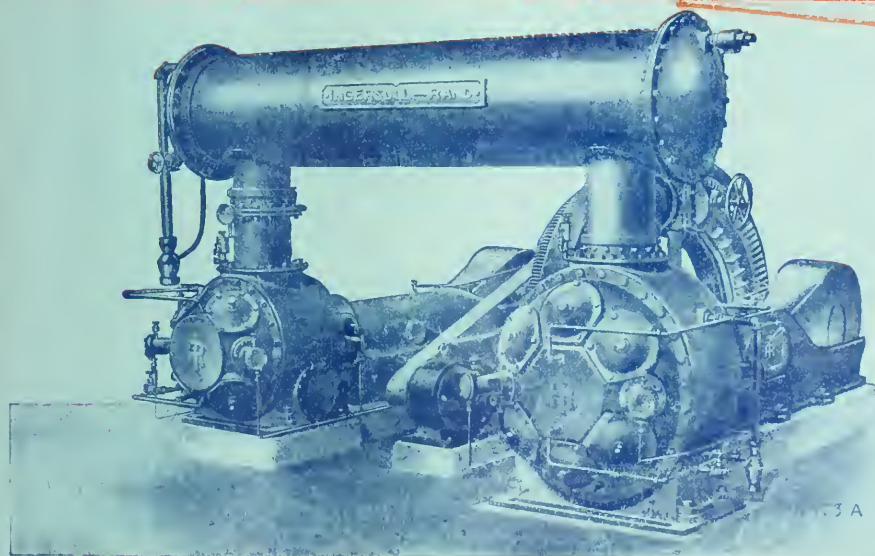
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NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Nineteenth Ordinary General Meeting of Shareholders for the year ended 31st March, 1916, will be held in the Board Room, The Corner House, Johannesburg, on Friday, 15th September, 1916, at noon, for the following business:—

1. To receive and consider the Balance Sheet and Accounts for the year ended 31st March, 1916, and the Reports of the Directors and Auditors.
2. To confirm the appointment of Mr. M. T. Brown as a Director of the Company in the place of Mr. Nicol Brown, deceased.
3. To elect Directors in the place of those retiring in accordance with the provisions of the Company's Articles of Association.
4. To determine the remuneration of the Auditors for the past audit, and to appoint Auditors for the ensuing year.
5. To transact any other business which may be transacted at an Ordinary General Meeting, or which is brought under consideration by the Report of the Directors.

The Share Transfer Books of the Company will be closed from the 15th to the 21st September, 1916, both days inclusive.

Holders of Share Warrants who desire to be present or represented at the Meeting shall produce their Share Warrants (or may at their option deposit same) at the places and within the times following:—

- (a) At the Head Office of the Company in Johannesburg, at least 24 hours before the time appointed for the holding of the Meeting;
- (b) At the London Office of the Company, No. 1, London Wall Buildings, London, E.C., at least 30 days before the date appointed for the holding of the Meeting.
- (c) At the Crédit Mobilier Français, 30 and 32, Rue Tailbout, Paris, at least 30 days before the date appointed for the holding of the Meeting. Only Share Warrants bearing French stamps can be deposited at the Crédit Mobilier Français;

and shall otherwise comply with the "conditions as to the issue of Share Warrants" now in force.

Upon such deposit or production, a Certificate, with Proxy Form, will be issued, under which such Share Warrant holders may attend the Meeting either in person or by proxy.

By Order of the Board,

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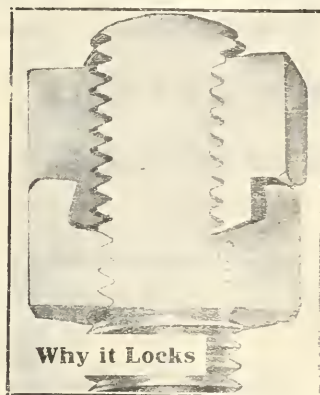
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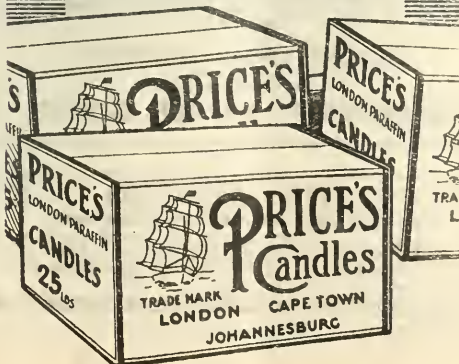
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Notes and News

The very full statement issued this week by the Bantjes Company effectually disposes of the **The Bantjes Position.** complaints regarding lack of public information in respect of recent developments. The Leader results, which include some Main Reef, give disclosures of a payable character over a distance of 1,210ft., namely, a reef width of 4ins. with an assay value of 9 dwts. The South Reef similarly for 270ft. gave 14ins. with a value of 26½ dwts. Encouraging values continue to be met with in the Leader development in most of the levels being advanced, and during the quarter, out of 63,440 tons estimated to have been developed by 2,440ft. on the Leader and Main Reef, 40,610 tons, equal to, say, 64 per cent., indicate payable values, and are expected to average 6-6 dwts. over a stoping width of 56ins. The footage accomplished from the Main Reef West Company's ground into this company's mine at a vertical depth of about 600ft. below the horizon of the bottom of the Bantjes Main Incline Shaft amounted to 188ft. of driving. To date 165ft. has been advanced on reef in this company's property giving an average value on Main Reef and Leader of 7-2 dwts. over a stoping width of 58ins. The development accomplished for the quarter shows a further substantial increase in footage and averages over 1,600ft. per month. Every effort is being made to carry out the maximum development work consistent with retaining economy and fair efficiency. The cost of this heavy development work has absorbed practically all the profit which would otherwise have been shown, leaving a net working balance of only £217 for the quarter. The tonnage milled shows a material increase for the quarter, and the costs a drop of 7d. per ton, but there was a decrease of 1s. 1d. per ton in the yield. This fact and the high development footage accomplished accounted for the small profit shown. During the quarter the labour position was better, but towards the end of March and during April labour has been less plentiful, and the mine is now rather short-handed. Stopping by machine has been recommenced during the quarter in two Leader stopes, which reef is much more suited to machine work than is the South Reef, and gradual further increase of machine stopping may be anticipated during the coming quarter, but it will be some months yet before the effect on profits of the more recent development can be looked for.

* * * *

It is a matter for genuine regret that Dr. Mellor, Assistant Director of the Geological Survey of the **The Resignation** Union of South Africa, has decided to resign his position. His work in various parts of the Transvaal during the past ten years, notably in the Middelburg district, but particularly in the Witwatersrand area, has established his reputation here as a capable and thoroughly sound geologist. His reports upon the Witwatersrand system, as far as they have gone, have proved the great value of economic geology when applied to the consideration of special problems, by throwing much useful and necessary light upon the structural conditions of the extreme western and eastern regions of this gold-field, to say nothing of the fundamental principles which he has laid down for the proper investigation of the system generally. It is unfortunate that so much remains to be done in the field which he has made his own, and that his valuable personal experience acquired during a close study of local conditions during the last five years or so, will not be available for the public benefit in connection with the survey of the remaining gold-bearing "banket" areas. We are not informed as to Dr. Mellor's reason for relinquishing his post, but take this opportunity of saying that it is an extremely short-sighted policy of the Government which does not make it worth while for public servants of such outstanding ability to devote themselves permanently to the interests of the country. We sincerely hope, however, that the Government will take the necessary steps to continue Dr. Mellor's work without undue delay. Fortunately, it is understood that he will complete his work on the Rand proper before leaving office.

According to the statistics furnished by the *Bankers' Magazine*, the aggregate values of 387 representative Stock Exchange securities decreased £7,068,000, or 0.2 per cent., in the period between March 21 and the 19th inst. The largest relative fall was £2,067,000, or 4.5 per cent., in 21 Foreign Railways, while the most important actual decline was £6,130,000, or 1.8 per cent., in 17 American Railway shares. On the other hand, four Telegraph and Telephone issues improved £834,000, or 8.2 per cent., eight Miscellaneous Mining shares advanced £377,000, or 7.6 per cent., six Copper Mines rose £2,182,000, or 5.2 per cent.

* * * *

The London papers to hand by last mail contain the speech of Mr. Walter McDermott at the annual meeting of the "C.M.S." in London, of which a full report appears in this issue. Much interest naturally attached to the working agreement proposed to be entered into with the Transvaal Coal Trust, and the brief reference to the matter provoked no questions. "So far as we can judge," said the chairman, "the scheme seems to be well received by the shareholders. There has been no serious criticism, and the source and reason of such little opposition as we see are well known to us as an exhibition of brotherly love not without precedent in South African finance."

* * * *

A Water Court, presided over by Mr. Justice J. E. R. de Villiers (Water Court Judge of the Cape Province) gave judgment last week in regard to the Vaal River scheme of the Rand Water Board. The Court found the normal flow at the point where the river first enters the storage area to be 250 cubic feet per second, and determined that the Rand Water Board may impound and store surplus water in accordance with the following provisions:—(a) During the period from January 1 to April 30, 86 per cent. of surplus water, whenever the flow shall exceed 250 cubic feet per second. (b) During the period from May 1 to December 31, the Board may impound surplus water whenever the flow exceeds 100 cubic feet per second, provided that, if it shall happen within any continuous period of 72 hours after August 1 in any year, 600 million cubic feet of water shall have flowed through the barrage into the river, immediately after the lapse of such 72 hours the Board shall be entitled to impound and store water during the remainder of the period from August 1 to December 31, according to sliding scale. As the result of the foregoing favourable decision, steps will almost immediately be taken to put in hand the very extensive works connected with the erection of the great barrage across the Vaal River, about 25 miles below Vereeniging, for which the Rand Water Board has obtained Parliamentary sanction. The conditions arising from the war will necessarily militate against the quick delivery of the piping, steelwork, and machinery involved in the scheme; but as it is believed that there is a great deal to be done before this equipment will actually be required, no untoward impediment to the general progress is looked for. It is anticipated that the full scheme will be completed within the period of three years. During that time the Vaal River below Vereeniging will represent one of the busiest scenes possible, as quite a small town is bound to arise near to the site of barrage. When the work is completed, and the Vaal in the neighbourhood of Vereeniging has been made to represent a permanent great stream 25 feet deep at the dam overflow, and 40 miles in length—that is to say from a point 15 miles above Vereeniging to 25 miles below—the sheet of water will be the largest of its kind in South Africa.

* * * *

In spite of the irregular method of declaring shipments, one is able to judge from the mineral statistics of the Union for the month of April, that both the copper and tin industries are carrying on in a more or less steady sort of way, there being little, if any, advance on the outputs of the immediately preceding years. The copper pro-

duction, indeed, appears to have fallen off slightly, the diminution being due, it would seem, to a smaller output from Messina. The output of marketable copper from the Transvaal for the past twelve months has been about 14,800 tons, in round figures, while the shipment of tin has amounted to some 3,500 tons. From the Cape the shipment has been approximately 15,000 tons of copper, and 30 tons of tin for the same period. The small lead mining industry of the Transvaal is obviously expanding, the yield for April being valued at £410, compared with a total value for 1915 of £1,833. The labour supply in the mining districts has been falling off somewhat as is usual at this time of the year; but it is still at a higher level than at this date twelve months ago. Among the results of this comparative abundance of natives is the continued use of hand drills in preference to machines, to a large extent. Coal mining in the Transvaal is being run on selling prices which show a marked tendency to decrease, while prices in Natal, the Orange Free State, and the Cape show a marked movement in the other direction. The production of miscellaneous minerals in the Transvaal, including £270 worth of mica, and consisting mainly of antimony, is valued at £1,994 for the month. The manufacture of explosives in the Union shows a drop from 86,054 cases in March to 70,422 cases in April, the latter figure being the lowest recorded figure, with one exception, since June, 1915, when the output was 74,929 cases.

* * * *

The Anglo-French Exploration Company is one of the few finance undertakings that makes it a practice to give full information concerning investments to those who have put up the money to enable the business to be carried on. The ordinary excuse made in other cases for not publishing a list of the investments is that it would be misleading, and would not be to the advantage of the company. If disadvantage were a penalty of publicity, the board of the Anglo-French Exploration Company could be safely trusted not to incur it. If incorrect inferences are drawn from an increase or decrease in the number of shares held in a certain company, the directors cannot be held responsible. The lists for the past three years are as follows:—

	1915.	1914.	1913.
City Deep	40,000	12,750	40,000
Van Ryn Deep	10,000	22,500	49,700
New Kleinfontein	8,123	12,651	19,950
Rand Klip	59,989	—	—
Meyer and Charlton	1,110	1,000	—
New Modder	6,250	4,500	—
New Boksburg	59,017	—	—
Magadi Soda, ordinary	12,344	9,500	9,500
Magadi Soda, deferred	2,000	1,500	1,500

Some of the above items suggest interesting reflections; the directors are too prudent to state why they make new investments or dispose of old.

* * * *

This week has produced the reply of the C.M.S. to Sir George Albu's criticism of the deal with the Coal Trust.

The C.M.S. and Sir George Albu.

Inter alia the reply states: It has been urged that the Transvaal Coal Trust Co., with its large holdings in Brakpan Mines and Springs Mines, can raise all the capital required to enter into this new business, but no mention is made of the obvious consideration that in order to borrow so large a sum of money from outside sources it would be necessary to pledge to the lenders the controlling interests now held in Brakpan Mines and Springs Mines—a proceeding which, we venture to think, would by no means commend itself to shareholders. The Consolidated Mines Selection Co. offers to lend the Transvaal Coal Trust Co., without security, as and when required, a sum of £300,000, which will enable the latter company to accept a participation in any attractive new business such as that indicated. The Consolidated Mines Selection Co. further guarantees to offer, for a period of ten years, a participation of 25 per cent. in all new business that it may undertake. Sir George Albu says the Transvaal Coal Trust Co. could "almost certainly" obtain such interests direct. The company is admittedly not in a position to tender for the new Government leases, each one of which will require approximately £1,250,000, and there is at present no obligation on the Consolidated Mines Selection Co., or any other party, to offer the Transvaal Coal Trust Co. a participation in any lease which may be obtained, while it is improbable, even if such a

participation were offered, that it would be upon such favourable terms as are provided for in the scheme now under consideration. The Consolidated Mines Selection Co. is in the happy position of being able to influence the disposition of large sums of cash, and its achievements in this direction were evidenced in the satisfactory financing of Brakpan Mines and Springs Mines, where sufficient funds were provided, not only in abnormal times, but also in the face of considerable discouragement in the actual mine results. We may even go further, and refer to the financing of the Daggafontein Mines, Ltd. The Consolidated Mines Selection Co., under its agreement with that company, contracted to advance £300,000 for the development of the property, of which £100,000 had to be subscribed practically immediately and the balance within a period of two years. It should also be remembered that the bulk of the working capital for Brakpan Mines and Springs Mines was found by the Consolidated Mines Selection Co., the Transvaal Coal Trust Co. assisting only in the raising of the Springs Mines Debenture Loan (which interest was subsequently laid off) and the guaranteeing of the Springs Mines Loan raised last year. This ability to influence sufficient funds places the Consolidated Mines Selection Co. in a particularly advantageous position to tender for the Government leases, and, such being the case, the definite offer of an interest of 25 per cent. in any new business secured by that company must be a very valuable consideration. It is obvious that the five years' option asked for would be of little value unless profitable new interests were brought into the Transvaal Coal Trust Co. The length of the period of the option does not seem unreasonable when it is remembered that in order to test the value of a Far East Rand deep level mine a very considerable proportion of the mine must be developed, and several years must elapse before the dividend paying stage is reached. In the case of Brakpan Mines, seven years elapsed between the commencement of shaft sinking and the payment of the first dividend, while at Springs Mines shaft sinking was commenced in 1909 and the dividend paying stage is not likely to be reached before the end of 1917. We now wish to refer to certain of the statements made by Sir George Albu in his circular. The sale of the 13,750 Springs Options mentioned by him realised the sum of £15,000, and was largely influenced by the offer received from the Consolidated Mines Selection Co. of a 5 per cent. participation in the Daggafontein Mines scheme, the profit secured from the sale of the options being sufficient to pay for the 15,000 shares subscribed for at par, and to obtain options for extended periods on a considerable further number of shares. This interest to-day could be realised at a very substantial profit, and thus affords a complete justification for the action of the directors in accepting the offer made. As regards the sale of the Reserve Shares, the price paid was slightly above the sellers' price on the day the offer was made; the underlying reason for the transaction was the desirability of providing additional capital in the event of the successful completion of certain negotiations then pending for the purchase of a new coal area. The Transvaal Coal Trust Company's unexpended capital at that time stood at £12,700, of which £8,500 had been earmarked for the sinking and equipment of the new incline and air shafts at Oogies Colliery. The statement that the company has cash in hand amounting to £90,000 is approximately correct, but it is incorrect to state that there are no debts, as sundry liabilities amount to about £20,000. Further, it should be borne in mind that of the cash in hand £12,190 accrued through the sale of 1,210 Reserve Shares, and £15,000 through the sale of 13,750 Springs Options. It may be to use Sir George Albu's homely metaphor—that the sheep has been shorn of all its fleeces. But even if this is so, it will be admitted that the Transvaal Coal Trust Co. received a good price in hard cash for that fleece, while shareholders may look in the near future to a new and profitable growth. We have yet to learn that the physical condition of a sheep, or even the fleece itself, improves if the clip is not taken when it is mature. Although Sir George Albu states in his circular that he has been a director of the Transvaal Coal Trust Co. for twenty-two years, he omits to add that the two directors who are in favour of the proposal have been directors of the company either here or in London since its inception twenty-seven years ago. It may interest you to learn that Sir George Albu, although he has been on the Board for some twenty odd years, had practically no holding in the company for several years prior to 1912, when he registered a small interest which even to-day is infinitesimal. From this plain statement it will be apparent to shareholders that Sir George Albu's reflections are groundless, and that his conclusions have no foundation in fact. The past record of the Transvaal Coal Trust Co. under the management of the Consolidated Mines Selection Co. has been one of unbroken success, and we have no doubt that shareholders will be willing to forecast the future by the experience of the past.

* * * *

As is well known, the Durban Roodepoort Company is nearing the end of its tether; but, according to the report just issued, it still has two years of life.

Durban Roodepoort.

What is perhaps not so well known is that since its formation it has paid no less than 1,175 5-6 per cent., or over £1,117,583, in dividends. The payable ore reserves have decreased 118,567 tons, to 326,526 tons, from which a recovery of 208, is anticipated. The yield per ton during the past year was 208, 2-11, as compared with 218, 1-04, and working costs were 158, 3-1, against 158, 5-10d., the rise in the latter item being due to increased price of stores, etc.

TOPICS OF THE WEEK.

THE FAR EAST: A FORWARD STEP.

THE announcement by General Botha in the House of Assembly a few days ago that a Bill to amend the Gold Law according to the recommendations of the Select Committee now sitting would be passed this session, is the best news the Rand has had for many a day. The significance of the statement hardly yet appears to be generally realised. The Select Committee has shown commendable expedition in collecting evidence from a variety of sources on the subject of the Far East. It has had the benefit of all the views, orthodox and unorthodox, that go to make up the medley or opinion on the value of the district. It has examined mining engineers, geologists, financiers, prospectors, and others less easily described. It has listened to the views of economists, amateur and otherwise; and it has considered all sorts of fancy schemes and nostrums for turning the potentialities of the area to the best and earliest advantage of the State. Most important of all, it has had the benefit of the closely-reasoned advice of the Government Mining Engineer, than whom no authority in the country is better qualified, from intimate study, training and experience, to give such advice. The result can hardly fail, in view of the status of those who compose the Select Committee, to advance the whole matter materially, and give us what the Rand has long been hoping and working for—a beginning with the development of the Far East. It is because we have such faith in the great good sense of the Select Committee, and in the convincing nature of the G.M.E.'s evidence that we read into General Botha's announcement so much of good augury to the Rand. Never was the moment for the introduction of a statesmanlike amending measure to the Gold Law more opportune. The Union finances require replenishing, and by expediting the opening up of the great resources of the Far East, the Government is giving proof of its genuine progressive tendencies. The Union troops, by all accounts, are sweeping the enemy before them in East Africa; and with an early successful conclusion to the campaign, many of our brave troops will be returning, and for all of them employment must be found. By opening up the Far East the field of employment can, of course, be extended enormously. Again, the war in Europe looks like continuing for another year, and a constant supply of gold will be necessary to maintain the free market for the metal in London that the war has not yet affected. After the end of the war, moreover, the demand for gold as a basis for the financial reconstruction of the devastated spaces of the Continent will be not less but more. To take such steps now as will facilitate the augmentation of the gold supply after the war thus becomes nothing more than a simple duty to the cause of the Allies and the Empire. Indeed, it is difficult to imagine for what reason anyone can oppose the opening up of the Far East, who has the interests of South Africa and of the Allied cause at heart. Difficult as it may seem to believe, however, there is opposition from some people who would hate to be classed among the enemies of this country. Some of the Rand papers, for instance, that have been asleep apparently to the agitation we have been carrying on for some years to educate the public up to the importance of the potential asset of the Far East, have begun to print some vague nonsense about working the Far East as a vast State Mine. This is not the time, and South Africa is hardly the country to embark on vast experiments in State Socialism, applied to the most speculative of all industries, viz., gold mining. We do not here propose to reiterate all the arguments against State Socialism. They will be found in half a hundred text books; and it is enough merely to explain the object these people have in view to invite ridicule for their whole scheme. It is true that two worthy members of the Poor Relief Commission, in a Minority Report, set their names to the extraordinary statement that by the State embarking on mining on the Far East, "thousands would be made comfortable" and "the stigma of indigence removed from the country". Our own view is that the people who have tried and failed to work up

a popular movement against the throwing open of the Far East were simply actuated by the destructive desire to make other people uncomfortable. The meeting at which the movement first took shape was thus described in these columns a few months ago; and nothing that has happened since has altered our opinion of the motives of those concerned. Our account read:—

A motley gathering of Socialists, Nationalists and "British Citizens" sat cheek and jowl on the platform of the "monster" meeting the other night to tell the Government what it should do in regard to the Far East Rand. All were agreed that the great Far East asset must be saved from the hated capitalists. The "British Citizens" hate the capitalist because he is conceived to be a German, the Nationalists because he is conceived to be a British Imperialist, and the Socialists because he is a Capitalist. Wherefore, all were agreed that the East Rand must be saved from "Capital" by means of the State being prevailed upon to work the area itself. Several of the speakers confessed they knew little about the subject, but, having admitted that great truth, they took care not to let it embarrass their eloquence. Others expatiated upon the enormous profits the State would divert to itself out of the pockets of the rapacious financiers, utterly oblivious of the risks of mining special and peculiar to the "patchy" areas of the Far East Rand, and girily agreed that the taxpayers' money could not be better employed than in exploiting the district and engaging upon the always speculative business of mining. Not a word was said about the difficulties of mining in the district, which would be accentuated rather than otherwise by the assumption of the role of mine owner by the State.

There is nothing to be added to the foregoing. That the movement was almost, if not quite, abortive is shown by the fact that we have heard nothing more of it till we read that a petition, signed by some persons unknown, was presented in the House of Assembly this week praying for State Socialism to be applied to the Far East. The fantastic desires of the disgruntled Adullamites can be safely left to the Government to deal with. The pity and surprise of it is that a clique of malcontents could be found sufficiently lacking in commonsense and patriotism as to attempt to delay the progress of the Far East Rand, and put back the hands of the industrial clock by years.

THE FINANCE OF INDUSTRY.

THE formation of an Industrial Bank, suggested by Sir Lionel Phillips at the annual meeting of the Chamber of Mines, continues to excite interest. On this all-important question of financing industry after the war, a "Broker" writes a very interesting letter to the London financial press, from which the following may be quoted:— "In Britain we may consider three lines of finance—the joint stock banks, the trust companies and the Stock Exchanges. It was by means of these two latter branches that German firms exploited and stole away our capital, building up with it the Grand Fleet or storing it in the Empire's warehouse. Why did this happen? It happened because we had left out of our banking system any centres where industrial resources could be gathered and employed on public utilities or enterprise abroad. We fed German banks and syndicates or want of such native centres. Our first line of finance, the joint stock banks, was not available. Probably the most perfect, as it is certainly the least liable to panic, of any banking arrangement in the world, our joint stock system was, and should always be, debarréd from trading at the risk of its depositors' funds or its own. It must play for safety under all circumstances. Therefore we rule out the great joint stock banks as we ruled out a great Government bank. The business of incalculable extent that we have in view cannot be attempted by politicians and ought not to be taken up by boards of directors who enjoy unlimited confidence because they have hitherto let it alone. Their function is of quite a different order. They had better keep to it. The trust companies and the Stock Exchanges remain, indeed essential, whatever Mr. D. A. Bevan and others may say, that German financiers should not have a controlling voice in any of our future undertakings, but if the captains of industry combine with our financial experts no danger need not be any longer a menace. The scheme I commend as practical and sound is set out in the following propositions:—(1) Establish in London a corporation, to be called the Industrial and Financial. (2) With capital

from £5,000,000 to £10,000,000, on the lines of the American one lately set up. (3) The money to be subscribed by the great trust companies in London and the country. (4) On the central corporation the provincial Stock Exchanges (which have enormous placing power with the public) should be represented in some thoroughly effective way. (5) Large capitalists could also be members provided that they did not create 'tied houses' for certain manufacturers. And here the German membership must be countered. (6) Vest the control of the London central body in a small Board, with a numerous general committee made up of representatives from all the different trusts and groups interested. (7) Each business to form the basis of a separate syndicate, and, whether a railway or public utility, to be developed by that syndicate, which would find all the money until such time as fully-covered securities could be offered to the public. Thus the small investor would not run the risk which he runs to-day of being landed with unripe securities and discovering prior charges put in front of him in the United States of America and in Germany. (8) All money found would be specified for expenditure in the British Empire, or, anyhow, German and Austrian contractors would be excluded." The need in Great Britain and the Dominions, especially this country, for this "financial organisation of enterprise" is, of course, very great. The part played by the banks in Germany in the past in assisting enterprise is described in the following letter from a British engineering manufacturer quoted in a recent issue of "The Times Engineering Supplement." The writer says:—

"It will be necessary to arrange that practical assistance is always available for promising developments. The great strength of the electrical engineering industry in Germany is not due to superior technical qualifications . . . but to the systematic financial aid which has enabled them to meet all demands as they arose, while giving the easiest possible terms to their foreign clients. The banks here have almost entirely confined themselves to the mechanical transfer of credit, and the negotiation of the instruments of credit, with an efficiency of very high order, and it may be that it is desirable to keep this business separate and distinct from the financing of enterprise. For the latter we require to organise the 'possessors of credit,' and link them with the 'possessors of enterprise' through an organised body of experts, possessing specialised technical and commercial knowledge, imagination, and sound judgment, who can pronounce on the soundness of any scheme submitted, and the proposals for its execution."

In all this there is a very obvious lesson for the Empire as a whole, and for South Africa in particular.

By the death of Major C. H. Mullins, V.C., C.M.G., this week, the Rand loses one of its most notable personalities. Major Mullins was a director of several important undertakings, including the National Bank, and his death was not unexpected, as he had been several months in failing health, through developments in connection with the injury he sustained to his spine in the attack on Mafeking in May, 1900. Major Mullins was born in Grahamstown, being the son of the late Rev. Canon Mullins of that city. He was educated at St. Andrew's College, Grahamstown, and Keble College, Oxford, after which he was called to the Inner Temple, and came to the Rand in 1892, when he entered into partnership with Mr. Bell, as Bell and Mullins, and later became a member of the firm of Hudson, Hutchinson and Mullins. For a considerable time the deceased practised at the local Bar. At the time of the relapse which led up to his fatal illness he was in Mbabane, Swaziland, in connection with judicial work for the Administrator of that country, and he was only brought to Johannesburg on Monday. As a soldier his career was most brilliant. In conjunction with Mr. Aubrey Woods-Sampson, now Colonel Sir Aubrey, Messrs. Donaldson, Karri Davis, and others, he helped to form the First Regiment of the Imperial Light Horse, nearly 17 years ago, and became Captain of B Squadron of that regiment. It was at Elandslaagte that he secured his V.C. for gallantry. The greatest sympathy is being extended to his widow, children, and to the members of the family in their loss.

THE EFFECT OF THE WAR ON GOLD MINING INVESTMENTS.

A Financier's Review and Forecast of the Present and Future Position of Mining Shareholders.

[CONTRIBUTED.]

Much gossip has been current for some time past as to what will be the position of affairs upon the declaration of peace. The situation in the financial world on and after the arrival of this longed for condition is too colossal for the ordinary layman to gauge without a study of figures which few would undertake, and he who does is likely to be wide of the mark. We will therefore take one very small section and really a comparatively poor one in this sphere of untold wealth—but, at the same time, a very necessary section. It is the vast redistribution of wealth, caused by war conditions, and the consequent employment and payment of all classes of society, that has created an even greater call upon the world's medium of exchange—namely, gold—and has transformed the gold industry of the Transvaal into an engine of war; £1 sterling, or its representative in other coin, is seldom lost or destroyed. A war loan merely means the calling in of a large sum which is to be distributed. This brings us to the fact that war is, from a financial point of view, a huge commercial business. There is no other business which employs all classes to the extent of the business of war. It is an investment and a speculation: the honour and financial strength of the people is the investment and the indemnity, and the power to recover trade relations is the speculation. The majority of the public are consequently becoming richer—even if the actual worker is spending every penny of his income, he is at the same time increasing the income of the seller, who, though, perchance, a careful man, is probably slightly increasing his expenditure while his savings are invested; thus the spend-thrift and the careful business man are assisting to increase the circulation of gold, and thereby the business and trade of the world. With the creation of vast Government Loans, or "National Debts," it is more than likely that a high Income Tax will obtain for some time to come. In view of this, it is certain that the investor will look for concerns paying high interest which will enable him to pay his Income Tax, and still retain, more or less, his normal income. There is no doubt that a large sum will be invested in securities paying interest "free of Income Tax"; but for many reasons a business man will not invest in one class of security and, consequently, there should be a large surplus for less gilt-edged scrip. This all tends to the idea that there is no particular reason why the present holders of gold

shares, should become sellers upon the declaration of peace. What may cause market weakness at that period is selling from holders, who hold the opinion that conditions will be similar to those at the close of the Boer War. In this they may be in error. The market prior to the 31st May, 1902, was almost entirely created upon speculative dealing. The activity of the past eighteen months has been produced by investment in dividend-paying stocks, and in spite of the fact that enormous increases in capital are shown at to-day's market prices, there is no anxiety to take profits, the question being asked as to what better concern or concerns the money can be put into. A most difficult question to reply to, even when considering the possibility of a shortage of supplies to the mines, as this could only be a temporary interruption, and in many cases, with regard to the Transvaal mines, large sums of money are held, portions of which could be used to meet increased costs and avoid the reduction of dividends. A reduction of dividend could, in many companies, be resorted to and still leave a good margin for interest and redemption. The realisation of the possibility mentioned would undoubtedly cause a speculative fall in market values; but that should not cause nervousness on the part of the real investor, who has studied the merits of his investment before acting. The effect of the rebuilding of portions of Europe should not reflect upon the small section of the world's sphere of investment under discussion to any great extent, if at all. The securities more likely to be effected are those hitherto known as gilt-edged. Government and municipal assistance, and a more attractive rate of interest than existing concerns are able to offer, will probably cause a large amount of exchanging of securities by investors in this class of investment. In conclusion, such a vast circulation of gold has never been known in the world's history, and there are few circumstances which may arise that can be looked upon as certain; but one is very probable, viz., that active circulation must continue for a long period in the reorganising of peace conditions. Even the consequent alteration of social levels caused, partly, by the vast redistribution of wealth, will undoubtedly create many and seriously distressing periods, but necessarily temporary; and, therefore, there seems to be no exceptional reason why the investor of to-day should not hold selected securities with an easy mind.

Scientific and Industrial Research.

In order that the Advisory Council for Scientific and Industrial Research may be in a position to do justice to the branches of industry concerned in proposed researches of great importance which have been submitted to the council by institutions and individuals, it has been decided to appoint standing committees of experts. We are officially informed that the following arrangements have been made in London: Strong committees in mining and metallurgy have already been constituted, consisting both of scientific men and of leaders of the industry concerned. The mining committee will have two sections, dealing respectively with the mining of non-metals and the mining of metals. Sir William Garforth has accepted the chairmanship of the committee of the non-metals section, and Mr. Edgar Taylor, of the firm of John Taylor & Sons, has accepted the chairmanship of the metals section. The metallurgy committee will also have two sections, dealing in this case with ferrous and non-ferrous metals respectively. Sir Gerard Muntz, of Muntz's Metal Company, Ltd., has accepted the chairmanship of the committee of the non-ferrous section, and Sir Robert Hadfield, F.R.S., of Hadfield's, Limited, has accepted the chairmanship of the ferrous section. The Advisory Council hopes at an early date to constitute a similar committee for engineering. Up to the present the council has been engaged in work which is mainly initiatory and preparatory in character. For example, in order that investigations already in progress should so far as possible be carried on in spite of the war, scientific and professional societies were invited to submit applications for aid to continue researches for which the necessary staff and equipment were obtainable. Grants have already been made, or will shortly be made, to the Institution of Mechanical Engineers (hardness tests and the properties and composition of alloys), to the Institution of Electrical Engineers (heating of buried cables and the

properties of insulating oils), to the Institute of Chemistry (laboratory glass and optical glass), to the Institution of Mining and Metallurgy (methods of extracting tin and tungsten), to the Institute of Metals (corrosion of non-ferrous metals), to the Institution of Gas Engineers (refractory materials), to the Manchester Association of Engineers (tool steel experiments), and to the National Physical Laboratory (optical glass). Other proposals of the same type are still under consideration. Timely and valuable results have been quite recently obtained from the researches carried out by Professor Herbert Jackson under the auspices of the Institute of Chemistry and from the researches carried out at the National Physical Laboratory by Dr. Rosinain. The Advisory Council has also recommended a grant in aid of an important new research into the manufacture of hard porcelain, especially for domestic purposes. This has been undertaken by the governing body of the Stoke-on-Trent Central School of Science and Technology, in conjunction with the Staffordshire Potteries Manufacturers' Association, with a view to the establishment of the manufacture of hard porcelain in Great Britain. Particulars have been obtained of the research work, not only of the scientific and professional societies, but also of the universities and higher technical schools, with a view to the establishment of a register of research. The possibility of proceeding to collect in the near future information under seal of confidence as to the research work of particular firms is also being considered. The training of an adequate supply of research workers will be an important branch of the Advisory Council's work, and the steps to be taken for that purpose will require much careful thought. It is impossible to announce definite plans during the war, but the Advisory Council is so much alive to the urgency of the matter that it has thought it necessary to take immediate interim action, and has therefore made recommendations which, if adopted, will, it is believed, secure that all that is practicable in existing circumstances shall be done.

PETROLEUM RESOURCES OF THE EMPIRE.

Oil and Oil Shales in the Colonies—The Necessity for Preventing Waste—Presidential Address at the Institution of Petroleum Technologists.

PRESIDING as the new head of the Institution of Petroleum Technologists at the general meeting recently, Professor J. Cadman, D.Sc., C.M.G., M.Inst.C.E., paid an eloquent tribute to the services rendered to the industry and to the country by the late President, Sir Boverton Redwood. Dealing then mainly with the large question of the petroleum resources of the Empire, he said:—

I would ask you to consider for a few moments a matter which I venture to think is of considerable importance at the present moment, and as the time at my disposal is so brief I am compelled to curtail my remarks within very limited dimensions. The greatest assets of a country are its productive industries, and as these assets dwindle, as they inevitably must, the importance of overseas dominions must just as surely increase. But in our easy-going Empire the policy of drift has too long affected every department in life and industry, so that now we find that our overseas resources, which are great, have not been developed sufficiently to be our standby in time of need. We have now reached a stage in the awakening of Britain at which we hear on all sides the reiterated determination that this policy of drift has got to cease forthwith and for ever. At this critical period it is not unnatural that the institution should take stock of its responsibilities, responsibilities which we owe to the profession and to the Empire, and to this point I am going to confine my remarks. Our individual responsibilities as members of the profession can be summarily dismissed by stating that never before has it become so essential that efficiency and activity should be put into our individual labours. Our responsibilities to the country open up a very wide subject. From many quarters of the Empire evidence of petroleum is almost daily being recorded, and with the possibility of large reserves within the Empire a common policy of development and conservation is indicated. To outline a policy here would perhaps be out of place, for serious consideration and discussion is necessary to assure a system which is applicable to every case. That it is possible, however, to formulate a scheme on general principles by which the most efficient results can be obtained from the capital expended is obvious. First of all, of course, a thorough geological examination of both proved and unproved territory is needed, and it would seem desirable for Imperial purposes that all geological maps and reports, whether prepared by private enterprise or not, should be recorded. In this direction it is worthy of consideration whether State measures are not desirable to secure the co-ordination and interpretation of geological data for all the Empire's oilfields. In the second stage, that of investigation, in which test drilling is the determining factor, waste of capital and energy may be avoided by bringing to light both failures and successes. While in the third period—development, production and refining—the waste of petroleum and natural gas could be handled to advantage. That some definite policy is desirable may be detected by noting the amount of crude oil and natural gas that is daily running to waste on every oilfield. To secure a uniform policy it would seem the duty of the various authorities within the Empire to confer with a view to common action, bearing in mind the requirements of the Empire as a whole, and in this direction the institution might render valuable assistance.

AN IMPERIAL STOCK-TAKING.

Arising from this is the stock-taking of the actual petroleum resources, whether from oil-sands or oil-shales, and an inquiry upon this subject could be profitably prosecuted. A committee of the institute

has already been formed to consider the oil shales of the country, and it might with advantage consider a scheme to cover the more comprehensive problem of the Empire's petroleum resources. Again, inquiry may be instituted concerning processes and methods which might render workable oil resources at present of little commercial count. The subject has already been ventilated in the technical Press, and too much attention cannot be bestowed upon this important problem. In order to carry out such an Imperial programme I may use such an expression—it becomes necessary to ensure a sound training for those who are to undertake responsible positions in the field. We have been in the past dependants upon German, Austrian and other foreign technologists in our oilfields, but the time has come when we must make up leeway and provide the Empire with efficiently trained British subjects. In the past experienced men were only available in foreign oilfields, and it is only within the last few years that an organised branch of the profession of petroleum technology has been in existence. A good deal has already been done by the Government to stimulate such a policy, although only directed to Crown grants of mineral oil concessions, and it is of interest to note that in some cases the Government has insisted upon the work being in the hands of British technologists. The educational problem is complex. It must not be considered that the educational process is complete and sufficient in the hands of the Universities unless in active co-operation with works and oilfields, where a large part of the training must be accomplished. There is a danger of it becoming assumed that a boy can be converted into a petroleum technologist simply by sliding through a University curriculum. The practical training is as necessary as the theoretical, and one without the other lacks the fundamental foundations which are absolutely necessary in the educational preparation which all technological workers of the future must submit to, if this great industry is to be handled with organised efficiency. The supply of materials is also a necessary adjunct of the policy just outlined, and in this respect British manufacturers must become alive to their responsibilities, and be prepared to manufacture every conceivable form of equipment and machinery which the peculiar characteristics of this industry demands.

THE QUESTION OF TRANSPORT.

Transport has an important bearing upon the rate of development of the potential zones within the less populated areas of the Empire. This has largely to be cultivated if the Empire is to profit by the rapid and cheap dissemination of petroleum and its products throughout the more thickly populated and industrial centres. Cheap and rapid transport facilities are indispensable, and a serious problem lies before the country to provide British-owned steamers for this purpose. There is little doubt that at the present time foreign enterprise largely caters for this traffic, and so long as the traffic is carried on primarily in the interest of foreign marketing companies the full measure of development of British resources must be subject to such influence. The future adaptation of liquid fuel for marine propulsion instead of coal is a subject receiving serious attention, and the solution of the problem will in some measure depend upon the introduction of fuel stations along the trade routes, similar to the present coaling stations, and there is already evidence of the formation of such stations. The necessity for the harnessing of the petroleum resources of the Empire, so as to ensure the most efficient production and use of the product, is a matter of great Imperial importance, and in this connection we cannot shrink from the fact that a grave responsibility rests upon us individually and collectively as members of the Institute of Petroleum Technology.

Institution of Mining and Metallurgy.

At the annual general meeting of the Institution of Mining and Metallurgy held recently in London, the report of the Council and statement of accounts for 1915-16, were adopted. The retiring President (Sir Thomas Kirk Rose) said there was every reason to believe that the letter which had been sent by the Council to the boards of directors of mining companies with regard to the return of members on active service to civil employment after the war would have the very best results, and that no apprehension need be felt on this matter. The Committee of the Privy Council appointed to deal with scientific and industrial research had invited the Institution to nominate two members to serve on the Mining Committee and two on the Metallurgical Committee, and the Council had every confidence that these matters would be safe in the hands of the members who had been elected. The research into tin and tungsten would occupy attention for some time, and a small committee had been appointed, of which Mr. Henry Jenner (President of the Royal Cornwall Polytechnic Society) and Mr. Arthur Thomas (Chairman of the Research Committee of that Society) were members. Thus the Institution would be kept in close touch with the Royal Cornwall Society, and the Council was now engaged in collecting information on the subject. Anyone with special information of tin or tungsten was asked to send it to the secretary, Mr. Walter McDermott, in moving a resolution embodying a tribute of appreciation to the large number of members of the Institution now serving in the forces in the various theatres of war, pointed out that some 700 members of the institution had joined the colours, and having regard to the members who were ineligible for various reasons, this was a very high proportion.

Those 700 serving had received 27 decorations of various sorts, and it was a tribute to the work that had been done that the War Office and the Royal Engineers should be asking the secretary to recommend more men. It was also interesting to note the number of students from the Royal School of Mines who were serving, the figures being quite exceptional. The actual number was 137 out of 151 eligible, and there were eight other students doing important munition work, making a total of 145. Of the six remaining, three were ineligible on account of health or being under age, and the other three had excellent reasons which prevented them from serving. Thus practically 100 per cent. of the students were serving, and in addition there were 13 members of the staff at the Royal School of Mines. No less than 24 decorations or "mentions in despatches" had been received. This he regarded as a magnificent record, and it was with regret that he noted the casualties had been heavy, although this might be expected from the large number of decorations. Twenty-four School of Mines men had been killed, 27 had been wounded, and three were missing, making a total of 54 casualties. On top of all this 210 of the old students of the School of Mines were serving, whilst a large number were at home acting in important positions as advisers to the Ministry of Munitions and in other capacities. In connection with the services which the Institution members were rendering to the country in this way, he mentioned the kindly action of the American members of the Institution who sent at Christmas time presents to the whole of the members on active service. Finally he referred to the valuable services the secretary was rendering in obtaining men. The new President, Sir R. A. S. Redmayne, K.C.B., then delivered his presidential address.

DR. MELLOR'S RAND GEOLOGY: A CRITICISM.

[By DAVID DRAPER, M.I.M.M.]*

THE author appears to have expressed opinions on several very important points that are not supported by the evidence he has brought forward. With regard to the deltaic deposition of the Witwatersrand conglomerates, he has dealt with the Johannesburg area extending from the Nigel to Randfontein as an isolated occurrence, and no mention is made in his paper of the great Witwatersrand system of South Africa as a whole. Every student of South African geology knows full well that the Witwatersrand beds outcrop over great areas in the districts of Heidelberg, Klerksdorp, Venterskroon and Vredefort in the O.F. State as well as in Zululand. The Lower Witwatersrand beds are especially well developed over this great tract of country. The Johannesburg area only differs from the others in the occurrence of the Main Reef series and its high gold value. But is this sufficient to warrant its having been deposited in a manner different from other portions of the same series, or is Dr. Mellor prepared to maintain that each occurrence of Witwatersrand beds has been laid down in the same manner, though in a separate delta? If not, then his delta extended practically half across the southern portion of the African continent, and, as an identical series of rocks occurs widely distributed in Brazil, the South American continent must be included. Dr. Mellor has produced no evidence to warrant the isolation of the Johannesburg area from the system in general. The persistence of identical beds of distinctive character is not confined to the Witwatersrand beds near Johannesburg. For instance, the remarkable regularity of the ripple-marked and feldspar beds in the Johannesburg, Heidelberg, Klerksdorp and Vredefort areas led me to individualize them and to name them as markers over fifteen years ago. In the same manner several members of the conglomerate beds themselves can be distinguished in the districts mentioned above, but so far as I know no actual Main Reef, carrying gold in payable quantities, has been found beyond the limits of the Johannesburg area. This is the only important difference between the last mentioned and the other areas. The remarkable persistence of some members of the Witwatersrand series, together with the abrupt changes from fine-grained argillaceous rocks to coarse sandstones, as in the case of the "Ripple-marked Beds," and to feldspathic rocks, as in the case of the "Feldspar Beds," must be attributed to other than deltaic action. These abrupt changes are even more noticeable in the Government and Promise series.

Placer origin of the conglomerates and their gold contents.—Dr. Mellor's section on p. 5 shows conformity of the entire Witwatersrand series from the basement conglomerates to the Upper Elsburg beds. This is in conflict with the views of many Rand geologists, who recognise unconformity at the base of the Elsburg or between the Elsburg and Kimberley series. In order to obtain a placer deposit the destruction of some pre-existing series of rocks is essential. No such series is known to exist, and Dr. Mellor shows the Witwatersrand beds lying directly on granite. It is self-evident that this being the case, the so-called placer deposits of the Upper Witwatersrand could not possibly have been derived from the destruction of the lower member of the system, and the absolute want of pebbles of granitic origin, or of quantities of feldspar in the quartzite themselves, precludes any idea of their having been derived from the destruction of the granite underlying the Rand. Nor would the destruction of either the Lower Witwatersrand beds or the granite have produced the vast quantities of quartz that go to make up the conglomerate beds. If then the placers are not of local derivation could so soft a metal as gold have survived the attrition caused by a long journey and the buffeting of the conglomerate pebbles? Can the metal gold be transported in suspension by aqueous means for any considerable distance? If so, why is the sluice-box employed as a device for saving this valuable metal? One cannot have it both ways. If the gold has been transported in its metallic form one would expect the coarser gravels to contain larger

particles than the finer sediments, but this is not the case. The exceeding fineness of the Rand gold is a characteristic feature. Dr. Mellor finally disposes of the infiltration theory, but there is that of de Launay to consider as a possible explanation of the occurrence of gold in the Witwatersrand beds. De Launay ascribed its origin to chemical reaction on a gold-bearing solution in operation contemporaneously with the deposition of the conglomerate beds themselves. By this means nuggets or crystalline gold could be formed; local enrichment where conditions were favourable would be a marked feature. No special reagents are necessary, for there are a multitude of substances, both mineral and organic, that could bring about the necessary precipitation. On p. 50 Dr. Mellor shows how this has occurred in recent times by what he calls insignificant agencies, and surely he will not deny Nature the power of producing the same results on a large scale. If the chemist can bring about the formation of nuggets or crystalline gold at will from solutions, surely Nature can do the same? Cosmo Newberry succeeded in forming nuggets of varying size in his laboratory. Are not nearly all so-called alluvial gold deposits formed in this manner? The isolated gold-bearing gravel of Hibernia Creek, the angular gold-bearing gravels of the Kantoor and Cyferfontein, near Krugersdorp, and the nuggety gold of Witpoortje, could not be attributed to the transport of gold suspended in running water. They are instances of the formation of nuggets from auriferous solutions *in situ*. In conclusion, I wish to mention the discovery of nuggets in the Rietfontein A Mine, one of the leading gold producers of the Witwatersrand. The nuggets, about 20 in number, were in the possession of the late Mr. Harold Strange, who placed them in my care as a loan collection to the Geological Museum at Johannesburg. They were handed to him just before the outbreak of hostilities in 1899 and all trace of them has been lost since then. They differed in no way from ordinary alluvial nuggets. The largest was about two ounces and the smallest about the size of a grain of pearl barley. A record of these nuggets is to be found in the Reports of the Chamber of Mines of South Africa.

*Read before the Institute of Mining and Metallurgy.

Rezende Mines.

The report of the Rezende Mines for 1915 states that there is a profit of £20,528, which includes £5,442 from old west section. After allowing for expenses £1,862, depreciation £3,310, income tax £598, legal expenses *re* Bromley claims £655, and extra expenditure in installing and treatment of Penhalonga tailings £706, there is a credit balance of £14,261. A final dividend of 1s. 3d. per share was paid in respect of 1914 and an interim dividend of 1s. 3d. per share has been paid in respect of 1915, which, with the directors' additional remuneration, absorbed £15,544, leaving £52,782 to credit of appropriation account. The sum of £3,310, which has been written off machinery and plant and buildings, is at the rate of 5 per cent. off last year's balances and 2½ per cent. off additions during the year. The ore reserves amount to 363,681 tons. The directors recommend a final dividend of 5 per cent.

Namaqua Copper.

The report of the Namaqua Copper Company for 1915 states that the balance at the credit of profit and loss (including £12,095 brought forward) amounts to £51,178. The directors recommend a dividend of 20 per cent. (equal to 8s. per share), free of tax, leaving £13,446 to be carried forward. The output of copper has been less, owing to the stoppage of the furnace caused by the impossibility of shipping coke at the proper time. There is again a falling off in the total of reserves of ore, and an endeavour is being made to meet this by additional development work during the current year.

POSITION OF THE ANGLO FRENCH EXPLORATION.

Though financial conditions, due to the war, have been against spectacular results, the Anglo-French Exploration, which boasts a long and very healthy-looking list of stock, share, and debenture holdings, and is substantially concerned with Eastern Rand gold-mining enterprise, shows the satisfactory profit for the year of £63,000, and makes its re-appearance in the dividend list with an 8 per cent. distribution. Generally, the company's position has been improved during the year, and since the end of it the scheme for cancelling the preference shares has been carried into effect. Under the scheme the £500,000 6 per cent. preference capital has been cancelled by the repayment of £200,000 in cash and by the issue of £300,000 4½ per cent. debentures. The directors classify the company's list of assets as at December 31 as under:—

Treasury Bills (since matured)	£212,532	9	10
Cash and Loans, after providing for all liabilities	42,331	1	3
War Loan	20,081	5	4
Foreign Railways and other securities ...	21,298	6	3
Shares in Companies yielding dividends ...	629,511	17	5
Shares in Companies which are at present non-dividend paying	153,662	14	3
	£1,088,147	14	4

The following items from the accounts compare with those in the 1914, 1913 and 1912 reports, as follows:—

	1915.	1914.	1913.	1912.
Cash	£35,107	£49,957	£10,148	£29,424
Advances against securities	—	65,636	154,889	180,357
High-class investments	252,912	158,614	163,394	188,925
Share interests—				
Union of South Africa	721,203	716,762	603,998	636,020
Rhodesia	—	31,238	27,984	—
Debentures	—	—	18,402	18,402

A committee, appointed by the American Wood Preservers' Association to study the life of sleepers, has made a report. Of untreated sleepers, the completed records show a life of from twelve to thirteen years, for a relatively small number of juniper sleepers. The shortest record is two and a half years, for a test on a relatively small number of gum sleepers. Among the records for the empty cell process of creosoting, only one is complete, and this shows an average life of ten years for oak sleepers, but as none of the sleepers were removed by reason of decay, this one record is of no particular significance. Of 162 records from 31 different railroads which have made tests of creosoting proper, 15 records are complete. The best service reported is an average life of twenty years for hemlock sleepers, which were removed because of rail cutting, and not because of decay. Six records of the open-tank creosote treatment, none of which were complete, show a life of nine and a half years for pine sleepers, all being still in service. Of 183 records relating to zinc-chloride treatment, 41 were complete. The maximum life, as far as reported, show approximately 10.7 years for red oak and 9 to 11.3 years for Douglas fir.

The President of the Capetown Chamber of Commerce, in the course of his annual speech, after reviewing the work of the Chamber for the year, said the past year had been one full of difficulty and anxiety to the commercial community of the Union, though compared with other parts of the world he thought South Africa had fared better than any other of the King's Dominions, the over-sea trade having been carried on almost uninterruptedly. The President mentioned that during the year under review only two steamers bound for Union ports had been lost owing to the war, for which security and the happy state of affairs show were indebted to the British Navy. After quoting trade statistics for the year, the President said that, looking at the figures all round, he thought they might take a hopeful view that the country was more self-sustaining to-day than ever it was, and good progress had been made during the past 12 months. This was more encouraging when they considered the disabilities under which the country laboured. Amongst the other questions dealt with by the President were sea freight and enemy trading. In conclusion, the President said as to the future, though the Lening it might have upon the trade of South Africa; but they might safely conclude that whatever they could produce the whole of Europe would be willing buyers for anything they could send them. America, even Canada and Australia, would require their products, not to mention the unexploited markets of the East. The commercial community should take time by the forelock, and make preparations accordingly.

	1915.	1914.	1913.	1912.
Other shares and interests	61,996	67,361	132,973	120,355
Loans	8,865	10,729	11,286	11,036
Debtors	8,285	6,859	11,758	9,909
Creditors, etc.	1,430	10,939	2,219	103,266
Liabilities on shares, etc.	625	29,248	2,705	12,920
Dividends, interest, etc.	74,551	69,808	72,665	44,244
Profits on realisations	23,393	27,797	65,115	36,339
Realised losses and amounts written off	17,028	10,933	6,721	5,816
Balance of depreciation	—	79,000	95,500	14,000
Depreciation written off	31,117	75,589	—	—

List of principal holdings of stocks, shares, and debentures at December 31, 1915:—

*Treasury Bills, £215,000; *War Loan (4½ per cent., 1925-1945), £30,000; National Railways of Mexico prior lien (4½ per cent. sinking fund redeemable gold bonds), £30,865; *Mortgage Company of Egypt (4½ per cent. first charge debentures), £10,000; City Deep, 40,000 shares; Central Mining, 5,000 shares; *Van Ryn Deep, 10,000 shares; *Anglo-French Coal Estates (preferred), 54,200 shares; *Anglo-French Coal Estates (ordinary), 55,055 shares; *Village Deep, 35,000 shares; *Rand Mines, 11,000 shares; Anglo-French Matabeleland, 43,131 shares; *Kleinfontein Estates, 26,485 shares; *New Kleinfontein, 8,425 shares; *City and Suburban, 5,000 shares; *Apex (10s. shares), 12,501 shares; *Rooiberg Minerals, 6,147 shares; *Nourse Mines, 4,750 shares; *Farrar Buildings, 11,000 shares; Afrikaander Proprietary, 19,147 shares; Anglo-French Land, 15,000 shares; Rand Klip, 50,989 shares; Randfontein Deep, 8,733 shares; *Meyer and Charltons, 4,110 shares; *Modderfontein L., 4,000 shares; *New Modderfontein, 6,250 shares; New Boksburg, 59,017 shares; *Robinson Gold, 3,395 shares; *Hollinger Gold Mines, 4,100 shares; *Hampden Cloncurry Copper, 2,000 shares; *Mount Lyell Mining and Railway, 5,416 shares; *Alaska Mexican Gold, 4,000 shares; Magadi Soda (ordinary), 12,344 shares; Magadi Soda (deferred), 2,000 shares; Buenos Ayres Waterworks (ordinary "A"), 1,000 shares. Those marked with an asterisk are investments upon which dividends were received or declared in 1915.

In addition to the above, the company has holdings of shares, etc., in sundry properties and ventures in South Africa and elsewhere, which on December 31, 1915, were valued at £23,612; and in cash or loans, after providing for all liabilities, £42,331.

South-West Transvaal April Diamond Output.

The returns of diamonds found in the alluvial diggings of the South-Western Transvaal during the month of April show a total not very far behind the figures of the two preceding months, as will be noted from the subjoined totals of the first four months of 1916:—

	Carats.	Value.
January	2,486½	£11,818 7 0
February	3,606½	20,970 10 6
March	4,041	20,632 16 0
April	3,592½	18,465 0 0

Sixty areas figured in the list, and the chief of these, with their total finds, were as follows:—

	Carats.	Value.
London	815½	£4,995 9 0
Dievedraai	107½	2,887 12 6
Bloemhof	418½	1,973 2 6
Koppiesvlei	189½	884 12 6
Goedehoop	140½	815 15 0
Kaiferspan	146	697 0 0
Mooifontein	133½	689 0 0
Christiana	140½	632 15 0
Klipkuil	115½	556 5 0
Zwenfontein	100½	542 0 0
Kromellenboog	70½	126 15 0
Panfontein	105	410 17 6
Plessisdam	90½	333 15 0
Kameelkuil	60	303 0 0
Cawood's Hope	59	282 11 0
Rietput	45	239 15 0
Eastleigh	58½	212 10 0
Mimosa	33	132 10 0
Leeuwbosch	19½	130 10 0
Zwartlaagte	24½	106 10 0
Blesbokfontein	26½	105 10 0
Modderkraal	15½	104 10 0

THE YEAR WITH THE RHODESIAN G. M. AND INVESTMENT CO.

THANKS largely to drastic economies in administrative expenditure, this company emerges from 1915 with a profit of £4,363, which being carried to the balance sheet brings the amount at credit up to £36,058. The most interesting of the company's Rhodesian shareholdings are 34,296 Lonely Reefs and 43,000 Cam and Motors. The directors report encouragingly on the performances and prospects of both companies. There were power-plant troubles at the Lonely mine in the latter part of the year, which "somewhat restricted milling operations," the tonnage crushed during 1915 being 56,910 tons, as against 61,590 tons crushed during the previous year. Owing to the lower average grade of ore treated and the higher working cost (due to the power troubles and general increase in the cost of stores), the profit for the year was reduced to £60,973 6s., the dividends declared and paid out of the year's profits being 15 per cent., as against 20 per cent. in the preceding year. However, the development of the 12th, 13th, and 15th levels has shown "a very marked improvement in the value of the ore at depth," the average assay value of the 180 ft. so far driven on the 15th level being 73.05 dwts. over 35.46 ins. The reef has since been cut at the 16th level, where "extremely satisfactory values and widths are being obtained." The ore reserves at December 31, 1915, were estimated at 157,279 tons of an average assay value of 15.06 dwts., showing an increase both in tonnage and value over the reserves at the end of 1914. Of the Cam and Motor the outstanding particulars are as follows:—During the year ending June 30, 1915, the company treated 142,702 tons of ore yielding bullion of a value of £222,067 1s. 7d., a return of 31s. 1d. per ton. The ore treated up to May, 1915, gave a recovery value ranging from 63.8 per cent. to 76.2 per cent. of the gold contents, but on completion of the new treatment plant in June last the recovery value increased to 82.8 per cent., and this percentage has since been maintained. The net profit for the year was £15,512 14s. 6d., "but with the improved extraction now being obtained the result for the current year should show a considerable increase." The developments in the mines (it is added) "continue satisfactory," the ore reserves at June 30, 1915, being estimated as follows:—Motor mine, 739,844 tons, valued at 41s. 4.9d.; Cam-Good Shepherd, 113,982 tons, valued at 41s. 7.2d.; Petrol mine, 10,105 tons, valued at 37s. 6.3d. Of the Rhodesian G.M. and Investment's mining interests, the account is, on the whole, progressive. At the Sabi mine no work was carried out during the year beyond that necessary for keeping the mines and plant in a good state of repair. The directors "do not anticipate it will be possible to secure the funds required for the erection of the reduction plant before the termination of the war, but in the meantime equipment plans have been prepared, and, should a favour-

able opportunity occur, they will take the necessary steps for raising the funds required." The ore reserves already developed in this mine are estimated at 49,000 tons of an average assay value of 10.36 dwts. and 3,300 tons valued at 8.85 dwts. A portion of the Bernheim group of mines, covering the Rothschild Parallel, Rothschild West and Vesuvius mines, has now been leased to a responsible group of tributors, on terms which are considered "very satisfactory to the company," and which "should produce a fair monthly revenue." The lessee of the Pretty Polly mine having failed to work it profitably, the lease has been terminated, and the mine is now in charge of a caretaker. Felixburg claims: The lease of the Sunbeam mine has worked "very smoothly" and produced "a satisfactory revenue during the year."

Thistle Etna G.M.

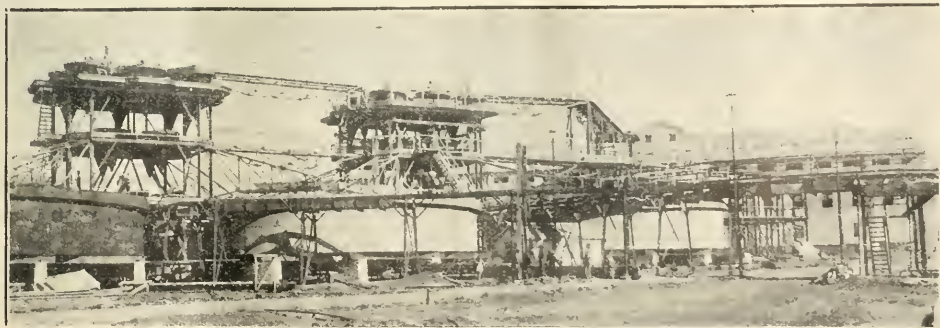
Tons. milled.	Yield.	Value. £	Per ton.	Costs† £	Per ton‡	Profit.
28,344	6,790	£29,138	20/6	£25,133	17/8	£3,252

*And 2.635 ozs. silver. †Including actual developments. ‡As compared with 20s. 2d. per ton for 1914. After allowing for realisation charges.

No further ore bodies were opened up on this Rhodesian property last year, and in consequence "no tonnage can be estimated from ore reserves." The ore now being obtained (they add) "occurs in the form of patches, the extent of which cannot be exactly calculated." Mr. H. P. Piper, the consulting engineer, in his report, states in this connection: "The ore remaining is of negligible quantity and impossible to estimate, as we are mining patches from several sections with the endeavour to keep the mill running." Ore reserves, surface and underground, 31/12/14, 25,275 tons; ore mined in the year 1915, 28,457 tons; excess balance, 3,182 tons. This balance was derived from pillars and profitable patches in the Etna and Tsessesbe mines. The results for the year. Mr. Piper adds—"are better than anticipated, chiefly due to the Tsessesbe mine," and he hopes to keep the mill working "for about the next three months on a small, profitable basis."

B.S.A. Explosives Co.

Lord Ribbersdale presided last week at a meeting of the shareholders of the British South African Explosives Co. (Modderfontein). The report for the year ended 31st October showed a profit of £56,000, and a dividend was declared to 7½ per cent., less income tax. It was also stated that the business overseas partly compensated for the decreased business in the Transvaal.



STATE MINES: NEW REDUCTION WORKS IN COURSE OF COMPLETION.

LONELY REEF RESULTS IN 1915.

1915.								
Tons milled.	Yield. ozs.	Per ton. dwts.	Realised. £	Per ton. 55s. 6d.	Costs. £	Per ton. 35s. 2d.	Profit. £	Div. 15%
56,510	361,799	12.92	152,374		94,406		57,968	

DURING 1915, on this property, the main incline shaft was sunk to a depth, on the incline, of 1,215 ft. below the 9th level. Two new levels (the 13th and 15th) have been opened up and connected by crosscuts with the main shaft, and a further level (the 16th) has been cut since the close of the year. The 14th level has not yet been opened up, but will be developed during the current year by means of a winze from the 13th level and a raise from the 15th Level. The development of the 12th level shows an extension of the ore body to a length of 521 ft., as well as an increase in the value and width of the reef. On the 13th level a shortening of the ore body is indicated, "but the value and width of the reef continues good," whilst on the 15th level the development so far carried out has given "extremely satisfactory results," the average assay value of the 180 ft. driven at the date of the acting-general manager's report being 73.05 dwts. over 35.46 ins. On the 16th level the reef was struck in the crosscut on March 11, the value at the point of intersection being 1 oz. 19 dwts. over 34 ins. Driving is proceeding north and south on this level with very satisfactory results. The ore reserves in the mine (including ore broken and held in reserve in the stopes) were estimated at December 31 last at 157,279 tons of an average assay value of 15.06 dwts., showing an increase both in tonnage

and value over the reserves at the end of 1914. The values met since the end of the year are (Mr. T. H. Boright, the acting-general manager, states in his report) "even better than those driven during 1915" (at the 15th level); and he adds in reference to the ore reserves:—"The position is therefore considerably more satisfactory than at the end of the previous year. There are now 2½ years' ore developed while crushing at the rate of 5,000 tons per month, and the bottom level is in extremely good ore. The average value of the ore reserves in the mine at the beginning of the year was 14.65 dwts. The ore sent to the mill was kept as closely as possible at the average grade of ore in the mine, the grade being regulated quarterly in accordance with the fluctuations in the value of the ore reserves. The tonnage milled during the year was 56,910 tons, equivalent to 4,742 tons per month, being 4,680 tons (390 tons per month) less than during the year 1914. This decrease in tonnage was due to power plant troubles. These troubles having to a great extent been overcome, the tonnage for the coming year should be considerably higher. The value of the bullion recovered during the year was £151,712 3s. 11d., as against £190,022 4s. 11d. in 1914, the difference being due to the smaller tonnage and lower grade of ore milled. The working costs at the mine were 25s. 9.8d. per ton milled as against 23s. 1.56d. in 1914. The total working costs were 33s. 7.0d. per ton milled, as against 30s. 7.78d. in 1914. The higher cost of operations for the year are directly due to lower tonnage treated and to power plant troubles, also to increase in cost of stores.

Lonely April Results.

The following are the particulars of the output of gold from the Lonely Mine for the month of April, 1916:—Mill ran 654 hours; crushed 5,230 tons; fine gold recovered, 828.036 ozs., value £3,480 10s. 6d.; slimes treated, 5,230 tons; fine gold recovered, 2,253.551 ozs., value £9,475 8s. 10d.; total recovery of fine gold, 3,081.587 ozs.; total value, £12,955 19s. 4d.; estimated profit, £4,641.

The Nigel Quarterly Report.

The report of the directors for the quarter ended 31st March, 1916, is as follows:—Development.—Nigel section, total 2,135 feet; Rand Nigel section, total 160 feet. Mining.—Ore stoped during the quarter, 35,500 tons; average width and value of stopes faces, 36 inches, 7.7 dwts. Milling.—Ore crushed, 35,200 tons; yield in bar gold, 5,847½ ozs.; yield per ton milled, 3½ dwts. Expenditure and Revenue.—Gross revenue, £29,762 6s. 9d.; cost of working, £43,665 9s.; loss, £3,883 2s. 3d. Capital Expenditure.—Plant and machinery, £5,346 7s. 9d.; buildings, £387 6s. 4d.; total, £3,733 14s. 1d. Remarks.—Development during the quarter proved very satisfactory. The grade of ore milled, however, was very low, which adversely affected the quarter's returns. Stoping was commenced in the first connection made in the new shoot, viz., between the 11th and 14th levels. No. 13 shaft is now down 413 feet. Values disclosed were disappointing, but the last 65 feet sunk showed an improvement. At the Rand Nigel, in "C" shaft, improved values were met with, latest assays giving 10 dwts. over 36 inches. The work of removing the boundary pillars between the exhausted shoots west of No. 7 shaft and the Sub-Nigel Company's ground had been commenced. The pillars are of good value, and will prove profitable to mill. The Marais shaft is now down below the 11th level. Sinking will be continued to the 14th level, with the object of hauling the ore from the new shoot to that section thus relieving No. 3 shaft to a great extent, besides shortening the tramming underground. Operations (New Shoot).—The annual report for the past year is already in the hands of shareholders, and it is, therefore, unnecessary to repeat here the information given therein regarding the new shoot. In order to economically develop the shoot and at the same time continue sinking the incline shaft, an expenditure of £5,000 has been incurred for new plant—boilers, compressors, condenser, machine drills, etc., etc. These were procured locally at satisfactory prices and are all in operation. The loss for the quarter under review amounts to £3,883, and it is anticipated that monthly losses varying in amount, will continue until the shoot is well opened up for the extraction of ore. This should be sufficiently advanced by December next, when it is expected profit-earning will be resumed. Full details regarding new development and financial arrangements were given by the Chairman at the annual meeting held on the 25th of the current month.

S.A.

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1915.

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ECONOMIC GEOLOGY AND MINERAL INDUSTRY OF SOUTH-WEST AFRICA.—VII.

By DR. P. A. WAGNER.

KIMBERLITE OCCURRENCES.

The numerical ratio of the profitable to unprofitable or barren occurrences of kimberlite in any particular area necessarily affords some criterion of the likelihood which exists of a new discovery within this area proving to be of real economic importance. All the forty odd pipes, dykes and chonoliths of kimberlite that have been located in the Gibeon, Bethany, Bersaba and Maltahohe districts are, as already stated, barren of diamonds, and the chances of discovering a rich occurrence in any of these districts would thus appear to be very small. South-West Africa has, however, already furnished such surprises in the matter of diamonds that there is no knowing what the future may hold in this connection.

FLUORSPAR.

Green fluor spar is stated by Range (71) to occur near Stinkdoorn, in the Great Kharas Mountains. No particulars in regard to the nature of the deposit are given.

GOLD.

No workable occurrence of gold has up to the present been located in South-West Africa, and the rich auriferous deposits, reports of which led Willem van Reenen in 1791 to seek his fortune in Great Namaqualand, still await discovery. A series of auriferous quartz veins were opened up shortly before the war to the west of Kunjas, in the northern portion of the Bethany district. The country rock is slate, belonging to the lower Nama beds, and the strike of the veins is from west to east. Some fairly rich ore occurs, but, according to Dr. C. Krause, it is very doubtful whether any of the veins are worthy of exploitation. The same applies to the veins located in the Kaokoveld, near Khorichas, to the south-west of Franzfontein, at Choabendus, and to the south-west of that locality. Gold occurs in association with copper-ore in the Henderson mine, in the Spitzkopjes and Rhebotho veins, previously referred to, and in a copper prospect in the Chuos Mountains. According to Rimann (107), the ancient granite exposed to the south of Rhebotho contains small quantities of auriferous pyrite, which circumstance probably accounts for the fact that the basal conglomerates of the Nama System are slightly auriferous in this area. Small nuggets of gold are occasionally found in the diamond-bearing "gravel" of the Lubeck and Dresden claims to the south-east of Luderitz, and also in the stanniferous gravels and "float" of the Eerongo tinfield.

GRAPHITE.

Graphite occurs in the neighbourhood of the Gorap mine, and also at Garubeb, on the Khan River. At Okanjanje, Okawakuatjiwi, and near Swakopmund the mineral is found disseminated through coarsely crystalline marble in small flakes and patches. None of the occurrences are of practical importance.

GUANO.

The exploitation of the rich deposits of guano on the so-called Guano Islands, lying off the coast of South-West Africa, has for many years past furnished the basis of quite an important industry. The deposits belong to and are exploited by the Union Government, which has adopted special measures for the protection of the guano-producing birds. The following is a list of the islands on which guano occurs: Hollams Bird Island, Mercury Island, Ichabo Island, Penguin Island, Seal Island, Halifax Island, Possession Island, Pomona Island, Plum-pudding Island, Sinclair's Island, South Island. The weight and value of the guano yielded by these islands between 1909 and 1914 were as under:—

Year.	Tons of guano collected.	Value per ton.	Total value.
1909	4,821.5	£7 10s.	£36,160
1910	3,973.0	7 10s.	29,797
1911	2,852.5	7 10s.	21,394
1912	4,162.0	7 10s.	31,214
1913	4,737.25	7 10s.	35,529
1914	4,832.25	7 10s.	36,242

Deposits of guano are also found along the coast of South-West Africa. A rich occurrence at Cape Cross was completely worked out some years ago by the Damaraland Guano Company, and smaller deposits at Hottentot Bay were also profitably exploited. Shortly before the war it was reported that extensive accumulations of guano had been discovered on the coast between the Ugab and Huah Rivers.

IRON.

The only deposit of iron-ore that has up to the present been worked in South-West Africa is situated a few miles to the north-west of Kalkfeld, in the Omaruru district, with which it is connected by rail. The ore, which appears to consist mainly of limonite, is employed at Tsumeb for fluxing the lead-copper ores that are locally smelted. The deposit is stated by Hermann (62) to be of contact-metamorphic origin. No description of it has as yet been published. Enormous deposits of very pure iron-ore (haematite and limonite), up to 50 metres in thickness, are interbedded with the rocks of the lower division of the Nama System in the western portion of the Kaokoveld. In view of their geographical situation, it appears doubtful, however, whether these

deposits will be exploited for very many years to come. Unimportant deposits of iron-ore are exposed at a number of localities in the southern portion of Great Namaqualand and in Bastardland. A bed of impure limonite occurs in Dwyka shale on the farm Eisenstein to the east of Keetmanshoop.

LEAD AND SILVER.

To the argentiferous copper-lead ores, exploited in the Otavi mines, extended reference has already been made. Quartz veins carrying galena and copper pyrites were worked during the sixties of last century at Pomona by the brothers De Pas. The veins occur in close proximity to the fabulously rich diamond-bearing "gravels" of that area, of the existence of which these hardy pioneers appear to have been quite oblivious. No attempt has been made of recent years to work the deposits, and they do not therefore appear to be of any great account.

Aiais.—A number of veins carrying argentiferous galena were discovered in 1912 at Aiais, situated a few miles east of the Fish River, in the extreme western portion of the Warmbad district. The country rock is granite, which is intersected by numerous basic dykes, and the veins appear to be developed along certain of these dykes. A good deal of exploratory work was done on these deposits during 1912 and 1913 by the South African Territories, Ltd., but as yet it has not been definitely established whether the veins are payable or not. Argentiferous galena has also been found near Blydeverwacht, in the south-eastern corner of the Warmbad district, and an unimportant occurrence of this mineral was opened up some years ago in the vicinity of Swartmodder, in the Maltahohe district.

LIMESTONE.

Limestone, as we have already shown, has a very wide distribution in South-West Africa, being found in practically all the geological formations from the most ancient to the most recent. Lime-kilns have been erected at a number of localities. Those known to the writer are at Epako, on the Otavi railway, where coarsely crystalline white marble is "burnt," and at Sandverhaar, in Great Namaqualand, where locally quarried schwarzalk is employed. At Warmbad and elsewhere surface limestone has been used. Where carefully selected this material yields lime of fair quality.

(To be continued.)

The issue of the *Weekly Bulletin* of the Commercial Intelligence Branch of the Canadian Department of Trade and Commerce, comprises 64 pages, of which 23 are devoted to Mr. MacMillan's Report on the Timber Trade of South Africa, considered, of course, from the viewpoint of the Canadian exporter, while the remaining forty pages are full of succinct information regarding trade conditions and opportunities in countries in which a market exists or can be created for Canadian goods. A list is also published of no fewer than thirty inquiries from all parts of the world received by the Department in the course of a single week in reference to Canadian goods which the firms inquiring wish to purchase.

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Sale of S.A. Investments in London.

To the Editor, *South African Mining Journal*.

Sir,—When people wish to be sarcastic at our expense, they talk about "Johannesburg having more brains to the square inch, etc., than any other part of the Universe." Nothing has brought this home to me more than the slipshod, idiotic manner in which we manage our principal affairs. We know, and we are continually being told that the mining industry, is our one and only mainstay. Incidentally these mines belong to the shareholders. We allow ourselves to be taxed to excess, without a murmur. What ever is wanted for the welfare of South Africa indirectly comes out of the pockets of the shareholders; but when it comes to protecting ourselves, then not a voice is heard on our behalf, even by those most closely interested. All our gold is shipped to England, and we are even allowed, by the grace of the Chancellor of the Exchequer, to send all our funds there to purchase shares; but when it comes to reselling these same shares on the London Stock Exchange, that is quite another matter. The London Exchange and the Local Exchange, if they have attempted to have this embargo removed, have gone about it in a manner, to say the least, is very peculiar. Can anything be more absurd than to agree to get rid of all our gold and all our cash assets, in order to purchase shares which are unsaleable on the principal Stock Exchange in the world, and we part and parcel of the Empire. The annoying part about this business is that foreign countries are allowed to sell their securities on the London Exchange. In the *London Daily Mail*, of the 10th of April, the following appears under the heading "Chat on 'Change':—" "Sales of French Securities.—Particulars are being freely circulated in Paris and other French centres of the facilities offered to everybody to sell his securities on the London market. Orders have to be given to the Bank of France, or one of its agencies; the securities must be quoted in London; they must have been in the possession of Frenchmen since before the war; no expense of forwarding and insurance has to be met by the seller and the Bank of France charges no commission whatever." Is it not time that our Stock Exchange Committee or Parliament got a move on, and that we are not kept in a worse position, with regard to our securities, than are the French people. Need we be surprised when our Stock Exchange gets top heavy, if there is no outlet, but continuous purchasing of shares which cannot again be resold, except locally. When foreigners and neutrals, who may or may not be friendly disposed towards us, are allowed to sell their securities on the London or Johannesburg Exchanges, and we are not allowed to do so, then the whole thing becomes a farce, and we ask ourselves is it right or fair that a British Colony shall have restrictions placed upon it to the advantage of our enemies, in many cases, and certainly to this country's disadvantage. We all know the saying of "Get on or get out," and this applies with emphasis to those responsible for this state of affairs.—Yours, etc.,

J. H. GOLDBREICH.

Native Recruiting and its Cost.

To the Editor, *South African Mining Journal*.

Sir,—As a shareholder in some of the Witwatersrand gold mines, and also as one who takes a very keen interest in the native labour question, I am of opinion that the time has arrived when a thorough and searching enquiry should be instituted by the directors of the various groups into (1) the reason of the continued high cost of native labour within

the Union, as at present supplied to the gold mines; (2) as to whether it is not desirable to adopt some new method, within the Union, for securing an adequate and cheap native labour supply for the mines. I understand the only system at present in vogue is, shortly, to pay a recruiter a capitation fee ranging from £3 upwards (the amount of the fee depending upon the length of the native's term of contract) on each native he sends to, and who is accepted by, a mine. Owing to the great advance made during recent years in ideas of the native as regards the necessity for going out to work, this system is quite unnecessary, and is now chiefly remarkable only on account of the high cost of native labour which its continuance entails. There are many clear signs, especially in the Transvaal, of a keen desire amongst the natives to come out to work voluntarily, and should this movement amongst them be encouraged as it deserves to be, it would, I am sure, in the not very distant future, go a long way towards solving the problem of an adequate and cheap native labour supply for the gold mines. Yet the present system of recruitment discourages and hampers in every possible way, this very desirable movement amongst the natives. The natives now know all the conditions as regards pay, treatment, etc., on the mines, from A to Z, so a recruiter cannot, conscientiously, offer a native specially attractive terms as an inducement, and it is a well known fact that it is practically impossible to persuade a native to go out to work before he is ready or before he has received "the call" to go out. When he is ready he will go, no matter what obstacles may be in his way. So why pay a capitation fee of several pounds for a native who has already made up his mind to go to the mines, and who is, in many instances, actually on his way there when "recruited" (?) by a recruiter? But it is plain that so long as the present system of paying a capitation fee of so much per head remains in vogue, no expansion in the voluntary movement amongst the natives can be looked for.—Yours, etc.,

FORWARD.

May 23, 1916.

Hadfields, Limited.

Hadfields, Limited, had a particularly prosperous year during 1915, having been able to raise the dividend on the ordinary shares to 25 per cent., and at the same time to carry forward a much larger sum than usual. The financial results of the past four years are compared in the following table:—

	1912.	1913.	1914.	1915.
Profit	£116,298	£109,513	£139,301	£265,403
Preference dividend	13,500	13,500	13,500	13,500
Ordinary dividend	80,000	80,000	90,000	100,000
	(20%)	(20%)	(22½%)	(25%)
Reserve	20,000	15,000	26,000	60,000
Balance	2,798	1,013	9,801	91,903
Brought forward	46,758	49,456*	50,469	60,210
Carried forward	49,566	50,469	60,270	152,175

Cam and Motor: Rich Strike.

The *Gatooma Mail* gives official confirmation of the rumours regarding a new strike on the Cam and Motor which have been prevalent lately. Naturally, it says, the mine officials have been careful not to commit themselves to any premature statement, but through the courtesy of Mr. J. McDermott, the general manager, we have been shown specimens from what will probably prove to be a new reef—and remarkably rich specimens they are. Streaks of visible gold run through the quartz, and Mr. McDermott has one specimen literally bristling with the precious metal. The strike is on the bottom level of the mine (the seventh). A winze has been sunk to this level and a drive commenced in the direction of the main shaft, which is now being deepened to meet it. It is in this drive that the new reef has been struck. The gold is free milling. The find has caused the greatest satisfaction in the district, and it is hoped that the fulfilment of the remarkably hopeful indications is only a matter of time.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Two Groups Buying Freely—More Orders as a Result of Agricultural Show—Demand for Small Batteries.

BUSINESS on the Commercial Exchange has received a much-needed impetus on account of two mining groups purchasing freely for complete supplies for the half-year ending December next. The mine to receive the most attention is the Government Areas, who seem to be laying in all kinds of consumable stores, battery spares and machinery fittings, so that the mine will keep running for many months with their present and forthcoming additional stamps, irrespective of anything and everything connected with the war conditions. The Sumner and Jack mine is also said to be similarly filling up its reserves to provide against every contingency. The business connected with other groups is exceptionally dull, some brokers think because of the end of the June half-year. Naturally, the public holiday on Wednesday made a broken week in trade affairs.

THE MARKET IN BRIEF.

Agricultural Machinery.—Although the Central Continental countries are quite out of our market, yet our merchants have still very large assorted stocks of Canadian, American and British makes of every conceivable implement. From the information available it appears that orders keep dribbling into Johannesburg since the Show. These come from an ever-extending area; the most notable this season is from Rhodesia, as the realisations of the weekly cattle consignments from there into our market, provides the necessary funds to purchase small motors, ploughs, harrows, and other up-to-date machinery required by the progressive agriculturists. One special feature is the general demand from all parts for labour-saving machines. For example, the motor-driven chaff cutter, baling presses, mealie shellers and planters, the increase in the number of furrows on the ploughs, reapers, mowers, rakes and so forth. Not only do the Johannesburg merchants carry heavy assorted stocks, but representatives of all the great makers in Britain, Canada, America and Australia have their offices here.

Aerial Ropeways.—There has been an enquiry from the Northern Transvaal for a small aerial ropeway, but no results seem to have taken place so far.

Assay Plants of a small nature are also in request, at least so far as enquiries are concerned from Rhodesia and the Lydenburg district.

Batteries, chiefly second-hand, have been rather freely sold, in sizes varying from 3 to 10 stamps. Values run from £75 to £275. Battery spares for these smaller sized machines are in demand and always saleable, and it pays the second-hand yards to secure and stock them. Cement of South African manufacture is not so scarce in Johannesburg as it was, as small lots of anything up to a ton can be easily obtained, as compared with a few weeks ago. Prices continue the same.

Electrical Plant.—All the municipalities are quietly in the market for switches, copper, and everything connected with electrical power driving machinery. As regards household goods, under this heading, the recent frosts have created a brisk demand for radiators, and in this respect it is pleasing to record that the complete framework of these

have been made in Johannesburg for several seasons past, and those now presented are an improvement over last season's. A large dealer thinks that the local makers will oust the imported article, as any metal worker can make them in his spare time, etc. However, they are about 15 per cent. dearer than the imported goods. It must not be omitted to mention that the higher voltage lamps are getting scarce, as it is very difficult to obtain two thousand candle-powers for the mines, and not easy to get the thousand kind.

Heaters.—The cold snap now very much in evidence has given the plumbers and the other trades connected with heating buildings and residences plenty of work in testing and repairing the present hot water supply arrangements. However, there is very little new work in sight at present.

Iron.—Only one alteration presents itself in our standard list, viz., round imported one-inch iron has advanced from 27s. 6d. to 30s. per 100 lbs. Shovels of the best makes cannot be had under 50s., being a rise of quite 5s. per dozen.

Oils, Paints, Colours, etc.—Raw and boiled oils have dropped to 30s. per 5 gallons on account of the cable advices showing lower prices in London. White lead in the British market has also fallen a pound per ton, but so far prices on this side remain undisturbed, but no doubt the drop there, particularly as pig iron has fallen rather sharply, will soon be reflected in the South African market. Turps receded 2s. per 5 and 10 gallon drums in Johannesburg. All this is simply on the fall in the London market.

Pipings, fittings, tees, elbows and bends are in better demand this week. Stocks of pipings, especially the smaller sizes, are anything but plentiful, and the hand tools, such as cutters, tongs and wrenches, are not at all easy of replacement. Values of these tools generally are decidedly higher.

Timber and Building Materials.—There has been an idea prevailing that timber has again advanced, but such is not the case, although there is a probability of its doing so, as stocks are getting scarcer from week to week.

Chemicals.—It has been ascertained that the price of mercury has been somewhat erratic of late, as merchants are anything but over-stocked. The mines have good supplies of their own, but when outside mines send orders it is not always convenient to send mercury per return, and may be an extra half-sovereign is charged beyond our standard list price or, possibly, a fraction under.

REVISED PRICE LIST.

Approximate war prices, subject to quick change.—Mining and building hardware: Iron, imported, round up to 1 in., 30s.; 1½ in. to 2 in., 13s. 6d.; 2½ in. to 6 in., 25s. per 100 lbs. Do., square, up to 1 in., 27s. 6d.; 1½ in. to 2½ in., 13s. 6d.; 2½ in. to 5 in., 25s. Flats, 3-16 in., 37s. 6d.; all from ½ in. up, 25s. Angles, ½ in. to 3-16 in., 30s.; ¼ in., 27s. 6d.; 5-16 in. to ¾ in., 25s., excepting 5 x 4 x ¾ in.; mild steel bar, 3½d. lb.; drill, 6½d. lb.; tool, 7½d. to 9d. lb.; steel plates, 10ft. x 4ft. x 1-16 in., 27s.; do., ½ in., and 3-16 in., 26s. 6d.; ¼ in. and upwards, 25s., 10 ft. x 5 ft. x 1-16 in., 28s. 6d.; ½ in. and 3-16 in.,

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26s.; 10 ft. x 6 ft. x 1-16 in., 28s. 6d.; 3-16 in. x 10 ft. x 4 ft., 26s.; $\frac{1}{4}$ in. up, 10 ft. x 4 ft., 25s. to 27s.; hexagon bolts, $\frac{3}{8}$ in. to 3 in., 8d. per lb.; over 3 in., 7d. lb.; $\frac{1}{2}$ in. up to 2 $\frac{1}{2}$ in., 50s.; 2 $\frac{1}{2}$ in. to 6 in., 47s. 6d.; 6 $\frac{1}{2}$ in. and over, 45s.; $\frac{3}{4}$ in. up to 2 $\frac{1}{2}$ in., 45s.; 2 $\frac{1}{2}$ in. to 6 in., 42s. 6d.; 6 $\frac{1}{2}$ in. and up, 37s. 6d.; $\frac{3}{4}$ in., $\frac{1}{2}$ in., and 1 in. up to 2 $\frac{1}{2}$ in., 40s.; 2 $\frac{1}{2}$ in. to 6 in., 37s. 6d.; 6 in. and up, 32s. 6d. 100lb. Nuts, $\frac{3}{8}$ in., 9d. lb.; $\frac{1}{2}$ in., 50s.; $\frac{3}{4}$ in. to 1 $\frac{1}{2}$ in., 47s. 6d.; 1 $\frac{3}{4}$ in. to 1 $\frac{1}{2}$ in., 52s. 6d. per 100 lbs.; 2 in., 7 $\frac{1}{2}$ d. per lb.; washers, $\frac{3}{4}$ in. and under, 37s. 6d., and above that size, 32s. 6d. per 100lb.; shoes and dies, 32s. 6d. to 35s. per 100lb.; rails, £20 per ton; picks, 4 lbs., 27s. per doz.; shovels, 32s. 6d. to 50s. per doz.; hammers, drill, 7 $\frac{1}{2}$ d. to 9d. lb.; hammer handles (best American), 14 in., 3s. 6d., 24 in., 5s. 6d., 30 in., 7s. 6d., 36 in., 10s. 6d. per doz.; metal, anti-friction, 1s. per lb.; galvanised iron, 24 gauge, 6 ft. to 10 ft., 9 $\frac{3}{4}$ d., 11ft., 10 $\frac{3}{4}$ d., 12ft., 10 $\frac{3}{4}$ d.; 26-gauge, 6ft. to 10ft., all lengths, 8 $\frac{1}{2}$ d. to 8 $\frac{1}{4}$ d. per ft. all-round; flat galy., 18 to 24 gauge, 32s. 6d.; 26 gauge, 34s. 6d. 100 lbs.; floor brads, 30s.; ceiling, 30s.; wire nails, 27s. 6d. to 32s. 6d. per 100 lbs.; solder, 50 per cent., 1s. 2d. per lb.; locks, rim, 45s.; mortice, 60s. doz.; barbed wire, 22s. 6d. to 25s. 100 lbs. coil.

Timber: Deals, Baltic, 9 x 3, up to 16 ft., 1s.; over, 1s. 1d. to 1s. 1 $\frac{1}{2}$ d. (Oregon, 11 $\frac{1}{2}$ d.); flooring, 4 $\frac{1}{2}$ x $\frac{3}{4}$ and 6 x $\frac{3}{4}$, 6d. to 6 $\frac{1}{2}$ d. per sq. ft.; do., 4 $\frac{1}{2}$ x 1 $\frac{1}{2}$, 7d.; and 6 x 1 $\frac{1}{2}$, 7d.; Oregon edge grain, 6d. to 7 $\frac{1}{2}$ d.; ceilings, 6 x $\frac{1}{2}$, 3 $\frac{3}{4}$ d. to 3 $\frac{1}{2}$ d. per sq. ft.; Oregon, 4 x $\frac{1}{2}$, 4 $\frac{1}{2}$ d.; pitch pine, 7s. 6d. to 7s. 9d. per cub. ft.; Oregon, 5s. 6d. per cub. ft.; clear pine, $\frac{1}{2}$ in. x 12 in., 7 $\frac{1}{2}$ d. per ft.; 1 in. x 12 in., 8d.; teak, small planks, 15s. per cub. ft.; do., large, 16s.; jarrah, 8s. 6d. per cub. ft.; poplar, 1 in. x 12 in., 9d.; scantling, 9 x 3, 11d. to 1s. per ft.

Bricks, cement, lime, etc.: Cement, nominal, 34s. 6d. per cask; Pretoria Portland, 9s. 3d. per bag; 8s. 3d., truck loads; lime, white, 7s. 9d.; truck loads, 6s. 9d.; slaked, do., 5s.; blue, 3s. 6d.; plaster lime, 4s.; bricks at kiln, stock, 36s. to 42s.; wire cuts, 40s. to 50s. pressed, 65s. per 1,000, road transport now normal; salt and white glazed bricks, £27 10s per 1,000; tiles, roofing, £17 $\frac{1}{2}$ square; glazed tiles, 10s. 6d. to 17s. 6d. yard; paving cement tiles, 8s. 6d. yard laid; terra cotta tiles, £15 per 1,000; reinforced concrete columns, 6 ft. plain, 22s. 6d., fluted, 24s.; fireclay bricks, £9 $\frac{1}{2}$, good average, per 1,000; clay chimney pots, 80s. per doz.; fireclay, 37s. 6d. ton on rail.

Oils, paints, lead, oxides, glass: Linseed, raw, 29s., boiled, 29s. per 5-gall.; white lead, 72s. 6d. to 75s. per 100 lbs.; turpentine, 52s. 2 $\frac{1}{2}$ galls.; 10/1, 57s.; coal tar, imported, 10s. to 11s. per 5-galls.; oxide in oil, 32s. 6d. to 37s. 6d. per 100 lbs.; dry oxide, 21s. to 22s. 6d.; S.A. crude oxide, 12s. 6d.; linseed oil putty, 4s. 6d. per 12 $\frac{1}{2}$ lb. bladders; 30s. casks of 100 lbs.; grease A.F. axle, 23s. 6d. to 25s. per 100 lbs.; tallow, 9d. per lb.; White Rose paraffin, 15s. 9d. 2 $\frac{1}{2}$; laurel do., 15s. 6d.; petrol, 26s. 6d. 2 $\frac{1}{4}$; motor oil, 6s. to 7s. 6d. per gallon; lubricating oils, 25s. per case; cylinder, 5s.; paints in tins, 10d. to 1s. per lb., according to quantity, and if ordered to be mixed, 15 per cent. on pre-war rates. British plate-glass, $\frac{1}{4}$ in., 3s. 6d.; do., mirror, 4s. 6d.; window, 16 oz., 1s. to 1s. 3d. ft.

Chemicals: Mercury, £18 $\frac{1}{2}$ per 75 lb. bottle; bichromate potash, 1s. 6d. lb.; chlorate, 2s. 6d. lb.; permanganate, 7s. 6d. lb.; alum, 9d. lb.; carbolic acid, 7s. 6d. lb.; borax, 60s. 100 lbs.; cyanide soda, 1s. 6d. lb.; hypo, 1s. 6d.; acetate lead, 67s. 6d. 100lb.; litharge (assay), 75s., commercial 50s. 100 lbs.; zinc sheets and blocks, 1s. 1. lb.; plumbago crucibles, 6d. per number.

Electrical Goods: Lamps, high volts., British, Holland & American, 16s. to 21s. wholesale, and 21s. to 27s. dozen, retail; carbon lamps, 7s. 6d. per dozen; pure rubber flex, 9d. to 1s. per yard; 3/20 coils of wire, 30s.; do., 3/22, 26s.; tubing, 12s. to 13s. 100 ft.; keyholders, 2s. 6d. each; round blocks, 3 $\frac{1}{2}$ in., 4s. dozen; lamp holder cord grips, 15s. doz.; switches, 5 amp., 13s. to 14s. doz.; British glass shades, 24s. to 36s. doz.; Bohemian shades finished; porcelain shackles, 14s. 6d. doz.; do., bobbins, 16s. 6d. to 18s. 100; cleats, 18s. per 100; P.O. insulators, 18s.; motors, 3 h.p., about £28 to £35, new.

Luipaardsvlei Estate Quarterly Report.

The directors' report on the operations at the Luipaardsvlei Estate for the quarter ended 31st March, 1916, states, *inter alia*—Number of feet driven, sunk, risen, etc., 4,218 feet; ore developed, 34,028 tons; ore mined, 80,976 tons; waste rock sorted out, 16,877 tons; ore crushed, 63,375 tons; milling time, 87 days 9 hours 24 minutes; tons crushed per stamp per 24 hours, average 12,086 tons; yield in fine gold, 4,761,827 ozs.; yield per ton crushed in fine gold, 1,503 dwts. Tube mills: Yield in fine gold, 5,587,880 ozs.; yield per ton crushed in fine gold, 1,763 dwts. Cyanide: Tons treated (equal to 69.55 per cent. of tonnage milled), 44,080 tons; yield in fine gold, 4,586,078 ozs.; yield per ton treated in fine gold, 2,081 dwts.; yield per ton crushed in fine gold, 1,447 dwts. Slimes treated, 19,295 tons; yield in fine gold, 1,658,912 ozs.; yield per ton treated in fine gold, 1,720 dwts.; yield per ton crushed in fine gold, 524 dwt. Total yield in fine gold from all sources, 16,594,697 ozs.; total yield in fine gold per ton crushed, 5,237 dwts. Ore reserves at 31st March, 649,450 tons. Cost per ton milled, 19s. 2.987d.; profit on working, £7,925 5s. 9d., equal to 2s. 6.013d. per ton; recovery, £68,920 5s. 10d., equal to 21s. 9.000d. per ton. No deduction has been made for profits tax on the figure of working profit quoted above. Amount spent on plant, buildings, etc., £2,602 17s. 2d. Amount spent on development, £11,593 19s. 11d.; development redemption, £9,505 5s.; debit on development account, £2,087 14s. 11d. Working costs are being affected by the increased cost of stores, principally as the result of the recent rise in freight charges.

E.R.P.M. Quarterly Report.

The report of the East Rand Proprietary Mines for the quarter ended 31st March, 1916, is as follows:—Incline shaft sinking, 403 feet; vertical shaft sinking, 96 feet; number of feet driven, risen and sunk (excluding shafts), 11,239 feet; footage sampled, 10,024 feet; average reef channel width, 24 inches; average assay value over reef channel width, 91 dwts.; number of cubic feet excavated (stations, ore bins, etc.) in addition to above footage, 87,180 cubic feet; ore mined, including ore mined from development faces, 560,564 tons; ore taken from surface dumps, 17,500 tons; percentage of waste sorted out, 9.2 per cent.; number of stamps in operation, 820; average running time, 72.5 days; ore milled, 525,400 tons; milling duty per stamp per 24 hours, 8.8 tons; yield, 84,655,309 ozs.; yield per ton milled, 5.223 dwts. Cyaniding: Tons treated, 524,526; yield, 65,209,959 ozs.; yield per ton treated, 2,486 dwts. Summary: Milling, 84,665,309 ozs., equal to 3.223 dwts. per ton; cyaniding, 65,209,959 ozs., equal to 2.482 dwts. per ton; total, 149,875,268 ozs., equal to 5.705 dwts. per ton. The actual expenditure on development amounted to £54,240 5s. 3d., as against £63,487 10s. provided in the working costs (at 2s. 5.0d. per ton milled), leaving a balance of £9,247 4s. 9d., which added to the balance at 31st December, 1915, of £328,278 12s. 1d., gives a total of £337,525 16s. 10d. standing to the credit of development suspense at 31st March, 1916. During the quarter £19,310 of the company's debentures were purchased. The values disclosed by development show no improvement. During the quarter the reef has been intersected at the following points, which are the lowest in their respective sections: Hercules, 32nd level, 61 dwts. over 92 inches; Angelo Deep, 30th level, 58 dwts. over 16 inches; Drifontein, 24th level, 21 dwts. over 22 inches. In addition the Main Reef Leader has again been disclosed on the 27th level, west, Angelo Deep, with a value of 18.7 dwts. over 27 inches for a distance of 30 feet; also the Main Reef on the 28th level, Angelo Deep, showing 4.9 dwts. over 33 inches for 5 feet. Working expenditure: Mining, £310,927 18s. 9d., equal to 11s. 10d. per ton; mine development, £63,487 10s., equal to 2s. 5d. per ton; reduction expenses, £101,807 10s. 6d., equal to 3s. 11d. per ton; general charges, £33,705 18s. 9d., equal to 1s. 3d. per ton; total, £509,929 18s., equal to 19s. 5d. per ton; working profit, £112,924 7s., equal to 4s. 4d. per ton; revenue, £622,854 5s., equal to £1 3s. 9d. per ton.

PERSONAL.

Professor Yates returned from Witbank this (Saturday) morning, and attends at the Mining Institute this afternoon to enrol students for the new session.

* * * *

Dr. A. J. Orenstein, Superintendent of Sanitation to the Rand Mines, Ltd., has returned after a seven months' visit to London.

FRANK E. NOTT, Private Detective.

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THE WEEK IN THE SHAREMARKET.

Big Advance in Government Areas—Dividend-Payers Strong—Business Quiet.

BUSINESS continues restricted, and was checked further by the Empire Day holiday on the 24th. African Farms been fairly stuck, in sympathy with Leeuwpoots, which have lost 25 per cent. from their best. Bantjes are unchanged; Brakpans very firm. A buying bid for Blaauwbosch Diamonds has produced no selling offer. City Deeps advance steadily; City and Suburbans, Main Reefs, Crown Mines and Consolidated Langlaagte are unchanged at top prices; East Rand Proprietary show no improvement; but on Thursday 9d. above the cash selling price was bid for bearer shares on Paris buying, whose only class of scrip is required. Glyms Lydenburgs are still in demand; Geduld Props. unchanged at the lower level. Government Areas, which crept up gradually all the week, came in for a big advance on Thursday, but eased off somewhat towards the close. The rise showing considerable profits on all transactions prior to the beginning of the week, doubtless tempted holders to part. Knight Centrals continue weak and neglected. Kleinfonteins have dropped steadily. Pretoria Cements are still on the upgrade. No one appears to be requiring any Randfonteins, either for speculation or investment. New Modders are unchanged; Modder B's slightly easier, and have again been passed by Modder Deeps. In tins, only Swazis are receiving any attention; Springs firm and unchanged. Coal Trusts rallied somewhat. The statement published in reply to Sir George Albu's attack on the proposed increase of capital, may have had a comforting effect. Van Ryn Deeps were in strong demand at improved rates, but eased off slightly. Knights seem to be quietly bought up, though the price is not being rushed. In the small stocks the only feature of interest was furnished by Roodepoort Uniteds, which are apparently showing better mining results. There is also a talk of an amalgamation with the Steyn Estate. Henderson's are active at low rates. Daggaferns no longer monopolise attention, but their price remains firm.

	Thurs., 18th.	Fri., 19th.	Sat., 20th.	Mon., 22nd.	Tues., 23rd.	Thurs., 25th.
African Farms	10 1*	10 1*	10 3*	10 1*	10 1*	10 1*
Apex Mines	5 9*	5 9*	5 9*	6 0	5 9*	5 9*
Aurora Wests	11 0*	11 0*	—	11 0*	11 0*	11 0*
Bantjes Cons.	13 9	14 0	14 3	13 9	13 6	13 6
Blaauwbosch Diamonds	—	—	—	—	—	47 6*
Brakpan Mines	77 0	79 0+	75 6	77 6*	78 6+	77 6*
Brevent Collieries	20 0*	—	20 0*	20 0*	—	—
Brick and Potteries	—	—	—	5 0*	5 0*	—
British South Africa	—	—	10 6*	—	—	—
Bushveld Tins	0 6*	0 6*	0 6*	0 6*	0 6*	0 6*
Cassell Coals	—	—	20 0*	—	—	—
Cinderella Cons.	6 9*	7 0+	6 6*	—	—	7 0+
City and Suburbans	36 6	36 9*	35 3*	36 9	36 6*	36 3*
City Deeps	76 3	77 6	74 9	76 7	77 6	77 6
Cloverfield Mines	9 2	9 0	8 6*	8 10	8 9	8 8
Cloeddale Collieries	12 0	11 6*	—	12 0+	11 0*	11 0*
Concrete Construction	—	1 6*	1 6*	1 6*	1 6*	2 0+
Cons. Langlaagtes	35 0+	35 0+	33 0*	—	35 0+	35 0*
Cons. Main Reefs	19 6	19 9	19 6*	19 9	19 9*	20 0
Cons. Mines Selection	17 0*	17 0*	17 0*	18 0+	17 0*	18 0+
Coronation Freeholds	0 4*	0 4*	0 4*	0 4*	—	0 4*
Coronation Syndicates	2 0*	2 0*	—	1 9*	—	—
Crown Diamonds	2 6*	2 6*	1 9*	2 3*	2 9+	2 0*
Crown Mines	52 6*	54 0	50 0*	53 0*	53 0*	53 0*
Crown Mines Debetures	—	£98+	—	£98+	—	—
East Rand Centrals	8 1*	8 1*	8 1	8 0*	8 3	8 0*
East Rand Coals	3 7*	—	3 6*	3 8*	3 8*	3 10*
East Rand Deeps	1 6*	1 6*	1 7*	1 6*	—	1 6
East Rand Mining Estates	18 0+	15 0*	15 6*	16 6*	16 0*	16 0*
East Rand Props.	13 6	13 6*	15 0+	14 0*	14 0	13 3
East Rand Debetures	£78*	£78*	£78*	£78*	£78*	£78*
Eastern Gold Mines	1 8*	1 6*	—	1 8*	1 7*	1 7*
Frank Smith Diamonds	2 3*	2 3*	2 4*	2 3*	2 3*	2 4*
Geduld Props.	43 6*	44 6	43 9	44 6	44 0*	—
Glencairns	1 6*	—	—	—	1 9*	—
Glence Collieries	6 6*	6 9*	—	6 6*	—	6 6*
Glynn's Lydenburgs	17 0+	14 6*	13 0*	15 6*	15 6*	16 0*
Goerz & Co.	—	14 0*	—	14 3*	—	13 9
Government Areas	33 6+	34 6	33 6	35 9	36 0	38 3
Juniters	—	—	6 6*	—	—	—
Klerksdorp Props.	1 9*	1 9*	1 9*	1 9*	1 9*	1 9*
Knight Centrals	12 6*	12 6*	13 6*	12 6*	12 6*	12 6*
Knights Deeps	21 0*	—	—	21 0+	—	—
Lace Props.	6 6*	6 7*	6 10	6 7*	6 9	6 7*
Langlaagte Estates	—	—	—	16 0*	—	—
Luipaardvlei Estates	7 0*	7 6	8 0+	7 6*	8 0*	8 3*

a Odd lots. * Buyers. † Sellers.

	Thurs., 18th.	Fri., 19th.	Sat., 20th.	Mon., 22nd.	Tues., 23rd.	Thurs., 25th.
Lydenburg Farms	8 0*	8 1*	8 0*	8 2*	8 1*	8 0*
Main Reef Wests	6 10*	6 10*	7 3*	6 10*	7 0	6 10
Meyer and Charltons	107 6*	107 6*	—	107 6*	—	107 6*
Middelvlei Estates	1 0*	1 1*	1 3*	—	1 3	1 3*
Modderfontein B.	132 0*	135 6	128 0+	133 0*	133 0*	133 6*
Modder Deep Levels	132 0	133 6*	127 6*	133 6	134 0	134 6*
Leeuwpoot Tins	16 0*	16 0*	18 0	15 0*	14 9	15 2*
Natal Navigation Colls.	16 6*	16 6*	16 6*	—	—	16 6*
National Banks	220 0*	—	220 0*	—	220 0*	220 0*
New Boksburgs	1 2*	1 3*	1 9*	—	—	—
New Eland Diamonds	—	—	17 6*	—	—	20 0+
New Era Cons.	8 0	8 3*	8 6*	8 3*	8 0*	8 4
New Geduld Deeps	5 7	5 7	5 7	5 8	5 7*	5 7
New Gochs	—	—	—	—	14 6+	—
New Heriots	54 0+	54 0+	—	52 0*	54 0+	—
New Kleinfonteins	29 9	28 9	30 6*	27 9	27 9	27 9
New Modderfonteins	340 0	335 0*	337 6+	335 0*	335 0*	340 0
New Rietfonteins	0 8*	0 8*	1 0+	0 8*	1 0+	0 8*
New Unifeds	13 0+	12 3*	—	—	—	—
Nourse Mines	—	15 0*	—	—	—	—
Pretoria Cements	68 0*	70 0	70 0+	71 6	73 0*	74 6
Princess Estates	3 0*	—	3 0*	—	2 4+	2 0
Rand Collieries	3 6*	3 7*	3 3*	3 6*	3 6*	3 8*
Rand Klips	8 3*	8 3	7 9	8 1	8 2	8 2
Rand Nucleus	2 0*	2 0*	2 1*	2 0*	2 1	2 1*
Randfontein Deeps	4 0	3 10*	4 3*	3 10*	3 10*	3 11
Randfontein Estates	13 3*	13 3	13 3*	13 0	—	—
Robinson Deeps	21 0+	20 0+	—	—	—	—
Rooiberg Minerals	13 6*	13 9*	—	14 0*	13 9	—
Roodepoort Uniteds	7 6*	8 0	7 3*	8 0+	7 9*	8 0
Ryan Nigels	—	2 7*	—	—	2 7*	—
Shebas	2 0*	2 0*	1 6*	2 6+	2 0	—
Simmer Deeps	2 0*	2 0*	1 9*	2 0*	2 1*	2 1*
S.A. Breweries	28 0*	28 0*	—	28 0*	28 0*	28 0*
S.A. Lands	5 9	6 0	5 11	5 11*	5 10*	5 10
Springs Mines	55 6	55 0	55 3	54 10*	55 0	55 3
Sub Nigels	16 0*	16 6	—	17 3	17 0	16 6*
Swaziland Tins	26 6*	27 6*	25 0*	23 0	27 0*	27 6*
Transvaal and Delagoa	—	42 0*	—	42 0*	—	—
Transvaal Coal Trust	66 6*	66 6	67 6*	—	65 0*	66 6*
Transvaal Lands	15 3+	—	15 6+	15 3+	15 3+	—
Transvaal G.M. Estates	—	—	20 0*	—	21 6*	21 6*
Van Ryn Deeps	70 0	69 6*	65 9	70 6	70 3*	70 3*
Village Deeps	—	31 0*	—	31 0	31 0*	31 6+
Vogel Cons. Deeps	1 8*	1 7*	1 9*	1 7*	1 7	1 6*
Welgedachts	23 6+	23 6+	24 0+	—	23 0+	—
Western Rand Estates	—	2 0+	1 9+	—	—	—
Witwatersrands	56 0*	55 6*	53 0*	56 6*	56 6*	56 6*
Witwatersrand Deeps	24 0*	24 0*	24 6+	24 6	24 3*	—
Wit. Townships	—	—	9 3*	9 6*	9 8*	9 9*
Wolhuters	9 4*	9 6	9 3*	9 6*	9 8*	9 9*
Zaaiplaats Tins	10 6*	10 6	11 9*	11 0	11 0*	11 0*

ANSWERS TO CORRESPONDENTS.

All inquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to inquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

"Option."—Dividends should begin about the end of 1917.

"X.Y.Z."—There is no reason to sell at present prices.

"Shareholder" (Capetown).—The 1916 edition of the Year Book will be ready at June 30.

"Anxious."—A decision has not been reached. Should be announced in our columns as soon as possible.

"Bantjes" (Capetown).—Statement in this issue answers both your questions.

"G.H."—Sorry. Impossible to use at present.

"M.A." (Selukwe).—(1) Yes. (2) Yes. Both good investments.

"Argus" (Beunoni).—(a) Good and improving. (b) Not yet. (c) Nothing known. Will doubtless follow further activity in the district. (d) Leave them alone.

Sakalava Oil.

The Secretary of the Sakalava Madagascar Proprietary Oil Fields, Ltd., has received cable advice from the field manager, Mr. G. M. Robinson, to the following effect, viz.: "Started drilling No. 4 well on the 26th April with 12 inch casing; depth, 60 feet; have erected new derrick."

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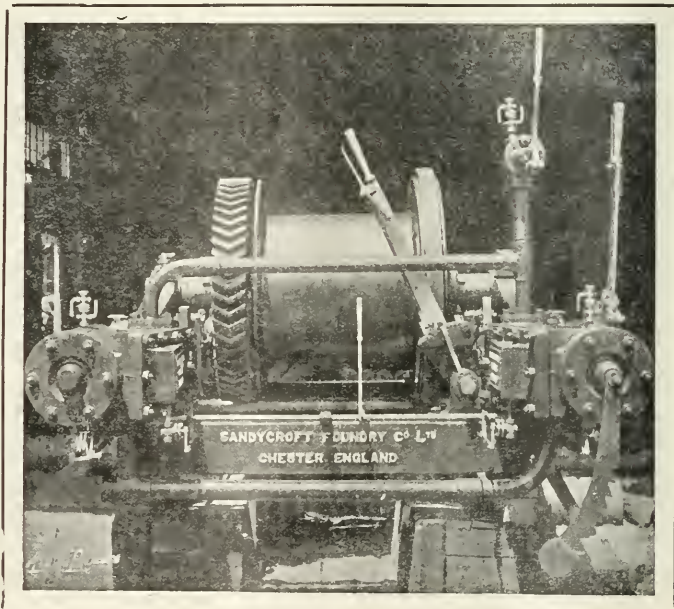
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Engineering Notes and News.

NATAL ENGINEERS' ASSOCIATION: INAUGURAL PRESIDENTIAL ADDRESS.

"The Engineer in His Relation to Business"—Important Paper by the Durban Municipal Electrical Engineer.

THE inaugural meeting of the Engineering Section of the Natal Society for the Advancement of Science and Art, was held on May 19. The Vice-Chairman, Mr. J. Borrin, presided. In his introductory remarks Mr. J. Roberts, the first chairman, apologised for his absence from the first meeting of the section. He had been sent to England on urgent business in connection with the present difficult position in regard to deliveries of material. He hurried up and completed his paper immediately he knew he had to go, and it was on account of the short time in which he had to finish it that he had not been able to put before them so complete an address as he had intended to do, when he expected to have more leisure for the task. He felt keenly disappointed at being absent during the inaugural period of the Society, but he was sure that the members of the committee were each and all alive to the importance of sparing no effort to make this newly established movement a success.

MR. ROBERTS' ADDRESS.

Mr. Roberts said: It is customary for the President of an Association such as this to give an address at the commencement of its year of office, and before conforming with this custom I would like to make a few remarks on this, the first regular meeting of the first Association of Engineers, so far as I know, that has ever been held in Durban—probably the first in Natal. It is fitting, first of all, that I should thank you for the honour you have done me in asking me to preside at your meetings. I am grateful for the personal compliment, and I am glad to think you have thought the branch of engineering to which I belong—electricity—is worthy to have one of its members selected to fill such a prominent place as this in a Society devoted to all the branches of engineering represented in Durban, and there are few not so represented. Now, in the brief remarks I propose to make to-night, I shall not address you on any special engineering topic. I think it best that a President should deal more with the broader aspects of a Society, for there is in our case plenty of talent as able or better able than I am to deal with special subjects, and I do not feel concerned as to any difficulty in persuading members to come forward to tell us of their achievements in the special branch of engineering in which they are interested, so that we can all derive some benefit from their experiences, and if they will also tell us of their mistakes and failures, then we shall be able to avoid these same mistakes in future. There is every reason for hope that this new Society of ours will turn out a great success, for the engineering trade or profession is growing to be of some magnitude here, and its interests are very diverse. It might appear at first sight that its extreme diversity would be against the success of our Society, but I am sure this is not the case; in fact I believe that this very diversity should add greater interest and value to our meetings. For though every engineer is first of all a student of his own particular line, there are few other lines in which it is not good, even necessary, that he should have some acquaintance. For instance, there are many of us here who use coal for heating or power production. It would be unfortunate if none of us specialised on coal and locality we have at least one of our number who is well qualified to tell us all about it—how it is mined, its composition and the best way to use it. The sugar manufacturer, the electrical engineer, the civil engineer, can all learn a great deal from a good paper on Natal coal and its peculiarities. The electrical engineer, I make bold to say, can make himself of the deepest interest to his colleagues in every other branch of engineering work. It would take a paper to itself, in fact, to enumerate the points of contact between the electrical and other branches of the profession. Take such a subject as the construction and upkeep of roads. It falls to the lot of many an engineer, other than the civil engineer, to build a road on a large or small scale, and a knowledge of the general principles of grading, drainage, quality of stone, binding, etc., may be of service to us all some day. I cannot believe that we have not in Durban the requisite men who are sufficiently keen on this work to turn up regularly at our monthly meetings, give us papers, and join in discussions, and make this Society a great success. I suspect, in fact I feel pretty certain, that there are a large number of us who are inclined to hang back because they are not accustomed to speak in front of their fellows, and who are afraid they will not be able some day to avoid being hauled on their legs. Well, I would say to them that such diffidence should be overcome by a determined effort, for it is the greatest use to every man to be able to

express himself, and if he is a man of ideas with information he has acquired either from reading or out of his own personal experience, then it is his duty not to keep it all to himself, but to give his fellows the benefit of it, and for a more selfish reason it is to every man's advantage to be able on occasion to give his opinion on a subject in a few lucid words and likely to be a very great factor towards his own advancement in life. It is unfortunate that a man of action is so often not a man of words. We all know that very often it is the man with the very least of value to say who is the most to the fore when a speech is wanted. And it is often the man who can say something—never mind what—who impresses himself most on others and gets into positions which other more silent ones are far better qualified to fill. And it will be a good thing if we remove from our meetings as much formality as we can, and while observing the common rules of a debating meeting, to cultivate a feeling of good-fellowship and freedom which will make it easy for a man who has something to say that is worth hearing to get up and expound the faith that is in him. I think the social element in our Society should be catered for. Engineers are usually busy people—except Corporation ones, according to the local Press—and do not have much time to meet and exchange ideas with their colleagues, and if we had an off night or two, with no papers, and sat around and smoked and talked, I am sure the evening would not be wasted, for everyone would be talking shop, as engineers always do. In fact, we want, I think, to make our meetings comfortable and pleasant as well as instructive, such as a man will look forward to with pleasure rather than as a duty, and will induce our friends from the country to come in to it. Perhaps even our Natal mining engineers will some day so time their visits to the coast as to include our monthly meetings.

"THE ENGINEER IN HIS RELATION TO BUSINESS."

With these brief preliminaries I will get on to the subject of my brief address, which I have headed "The Engineer in His Relation to Business." How often has everyone in this room heard the dictum passed on one of our profession, "He may be a good engineer, but he is no business man." I propose to examine that proposition, to attempt to discover what grounds there are for it, whether it is true, and, if so, what must be done about it. In the first place I shall suggest that it is a stigma no engineer can allow himself to rest under without protest. In fact, I shall endeavour to show that an engineer without "business" capacity is an engineer in name only and can never achieve success. Now the word "business" is that one for myself I find some difficulty in defining. I suppose it amounts to the successful sale of some commodity so as to secure as great a return as possible. The successful business man is he who has made a fortune out of buying cheap and selling dear; his business is that of a distributor of goods. Far be it from me to disparage such a part of our economic life. It is a necessity under present conditions and likely to remain so. The manufacturer of a staple line of goods is rarely a retailer, and the distributor acts as an indispensable link between producer and consumer. There are also the business men who are generally found at the head of manufacturing concerns. He is generally only superficially informed on the technical details of the manufacturing processes of his business. He devotes his energies to the sale of his goods when they are ready for the market. The engineer is given the responsibility of seeing that the goods are properly prepared for the market, and the policy adopted for selling, the prices at which they are sold, etc., are matters he is not allowed to concern himself in, and is usually considered incompetent to deal with them. It is rather a strange thing that we find very generally among engineers that such a division of control is accepted without protest, and even without any appreciation of the anomaly. In some cases the technical man knows that if the whole of the control were placed in his hands the final result would be improved. In the great majority of such cases, however, the situation is accepted as inevitable, with the result in many cases that a manufacturing proposition quite sound on the technical side fails from the fact that the control is in the hands of one who cannot conduct the business portion successfully. But in most cases the engineer accepts the position of responsibility without control as quite the natural order of things. He will tell you "he is not a business man," and is content to remain in a position where only half

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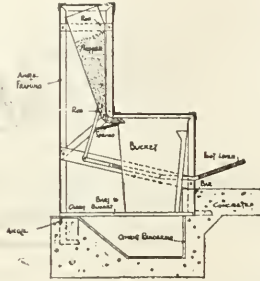
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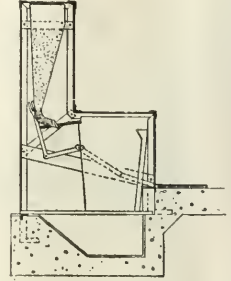
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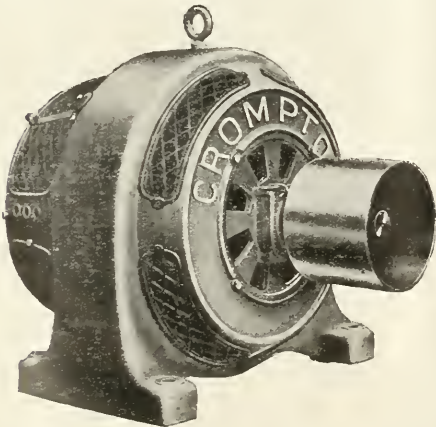


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of his knowledge and training can be made useful. It is that man whom I wish to address to-night, and to rouse to the need for greater self-assertion in the "business" side of the work on which he is engaged, and I will set down a few questions which bear on the subject and which I will endeavour to answer in such a way as will, I hope, "give him furiously to think." Why has the present prejudice against the engineer as a business man come about? Is there anything difficult about the business control of any enterprise which the engineer is unable to perform, or is his training against him for the carrying out of commercial work? Does it, in other words, require faculties of a higher order to sell a thing than to make it. Let us take the average business man without technical knowledge, and let us see what is required of him. In all the foregoing we assume that the men we are discussing are honest and conscientious, desirous only of giving a square deal to everyone, anxious to sell a good article, and content with a reasonable profit. Now the business man will claim that he is called upon to exercise powers of organisation. Is not that the very first essential of the engineer, and I digress to say that by engineer I do not mean the craftsman or the mechanic. Their business is confined to exercising their minds and hands on doing some particular work well. I do not disparage them, for there is no one stands higher in my respect than the mechanic who turns out a good well-finished, and when circumstances permit, tasteful piece of work. I now speak of the engineer as the man who designs, directs and controls others upon some constructive labour, be it the building of a tunnel or making steel pins. Will anyone say that such a man, if a successful man, need not be an organiser? It is the very first thing he must be. Intelligent organisation is the indispensable. If he is in a manufacturing line he must arrange the plant in such a way that the various manufacturing processes are carried on to enable the materials to move through these various processes with the least amount of handling—if possible, the raw materials enter the building at one end and emerge as the finished product at the other. How often do we see works put up with a complete disregard for such a consideration as the above, and when we come to inquire into the reason we frequently find that the man who laid out the place was a "manager" who possessed no engineering training. I can think of a proposition which came under my notice lately which will illustrate the point. Some new works were projected for a process which requires a certain amount of water for cooling purposes, and one of the directors discovered a piece of land which, though otherwise inconvenient in many ways, had the advantage of containing a pan of water within its area. So the land was bought, a long way from a town, in order to save Corporation charges for water. The amount of water wanted was quite small, and if an engineer had been consulted he would have shown that by putting up a cooling tower all the cold water they required could have been secured at nominal expense on a site much more convenient from every point of view than the one out in the country they had selected. The lay-out of his plant is only the beginning, though it is indeed the very foundation of the engineer's organisation. All the actual processes of manufacture must be organised too. Regular inspection of all the work as it proceeds must be carried out, so that faults are discovered and rectified as soon as they occur. Every engineer is aware of the necessity of the organisation that is essential to exercise the unceasing vigilance required to get the best results out of a manufacturing plant, be the product electricity or soap, so I need not labour the point, and it is, therefore, amusing to hear the business man priding himself on his power of organisation and his superiority over the engineer in this respect. Now, why is it that the engineer remains in his present position of inferiority and is so frequently, even when paid a high salary, treated as the glorified mechanic? Because he is the lineal descendant of the blacksmith and the engine driver who were artisans pure and simple. The development of modern engineering is completely ignored, and so far as the status of the engineer is concerned, engineering colleges might never have existed and engineering degrees

would be valueless. Now the engineer must strive to remove all that and must struggle for control as well as responsibility. That he has got it in him to take positions of control in commercial as well as engineering matters I have not the least doubt. I am sure all of us can call to mind instances to prove this. We know of men with only a technical training who have been put in charge of purely selling concerns who have turned a struggling business into one yielding good profit and brought about quite remarkable expansion. It is of course only to be expected. An engineer and only an engineer can realise what class of machinery or tools are most suitable to the conditions of the market and where the standard article can perhaps be advantageously modified to suit these conditions.

Swaziland Tin.

The following are the results of the operations of this company for the month of April, 1916:—Concentrates recovered, 40,301 long tons; estimated profit (taking the price of tin at £185 per ton), £2,278.

American Banks Financing Foreign Trade.

A statement issued from the American Consulate General in London calls attention to the increasing extent to which both the import and export trade of the United States are being financed by means of commercial letters of credit opened with American banks and dollar drafts drawn against these letters of credit and accepted and discounted in the United States. It is mentioned that this is among the most important of recent developments in American foreign trade. Hitherto European banking capital has been abundant and ready to supply the necessary means for financing international shipments, but such capital has now been largely withdrawn from the American sphere of activity, owing partly to the conditions of belligerency and partly to the fact that the resources of European banks have been taken up in other directions. It seems that many merchants engaged in trade with the United States occasionally find themselves handicapped by the impossibility of obtaining the commercial accommodation to which they have been accustomed in the past, not knowing that they may now turn for this accommodation to banks in the United States. No doubt it will be useful, therefore, to have it generally understood that by the Federal Reserve Act, 1914, American national banks were empowered to accept drafts based on import and export transactions, and the functions of many other American banks have been similarly enlarged with the result that there is now a well developed discount market in the United States for bankers' acceptances and for other forms of commercial paper used to finance import and export transactions. Under these circumstances the Consul General in London has been authorised to inform banks and business men in this country that they can now, through any one of a number of responsible American banks of large capital, obtain facilities for financing shipments to or from the United States in the same way that they have formerly done through European banks. The Consul-General will furnish on request the names of some of the principal banks in the United States which are prepared to do acceptance business, and which have been granted full acceptance powers by the Federal Reserve Board created by an Act of Congress of 1914.

Specimen copies of the *South African Mining Journal* can be had from our Agents, Argus South African Newspapers, Ltd., Byron House, 82-85, Fleet Street, London,

THE PAST YEAR'S ENGINEERING PROGRESS.

SHIPBUILDING.

THE foreign statistics given by Lloyd's are those for the United States, Holland, Norway, Japan, Denmark, France, Italy, Russia, Spain, Sweden, and Chile. The United States shows a total of 177,460 tons, Holland 113,075 tons, Norway 62,070 tons, Japan 49,408 tons, and Denmark 45,198 tons. American yards show an increase over the previous year of 23,302 tons, but Dutch shipbuilders launched 5,000 tons less than in 1914. Lloyd's returns of British shipbuilding to December 31 show a gradual decline in the tonnage of merchant vessels under construction, the return for the December quarter giving a total of 1,563,590 tons, compared with 1,627,316 tons at the close of the year 1914. For the year ended June 30, 1915, the number of vessels completed in British yards and classed in Lloyd's Register represented a tonnage of 844,184, out of a total tonnage completed for that year of 1,295,523. This period included ten months of war. For the year 1915 the merchant tonnage launched from the yards of the United Kingdom was 650,919 tons, which compares with 1,653,553 tons for the calendar year 1914. The effect of the concentration on warship building is thus revealed. It has stifled ordinary work, and yet were the complete figures, including those referring to warships, available, it is certain that a new and surprising record in construction would be established. Although merchant shipbuilding in the United Kingdom and in all the belligerent countries has been greatly retarded by the needs of the war, the industry has received a great impetus elsewhere. Increase has been very marked in the United States, where the number and tonnage of vessels either under construction or contracted for constitutes a "record" for American yards. More orders have also gone to Japan, to the Scandinavian countries, and to Holland. The largest passenger ship put into the water last year was the New Zealand liner Aotearoa, a 15,000-ton vessel built by the Fairfield Company. The Asonia, built by Messrs. Blohm and Voss, was a 14,000-ton ship. The Aurania, 13,400 tons, was constructed by Messrs. Swan, Hunter, and Wigham Richardson; both this and the Aotearoa are to be fitted with geared turbines. Of the nine vessels of over 10,000 tons launched last year five were German, and only three British. The output of British merchant vessels was much greater than the combined total output of the United States, Holland, Norway, Japan, and Denmark. The outstanding feature of the year was the growth in popularity of the Isherwood system, which is now being applied to many classes of ships, including general cargo vessels, oil tankers, passenger ships, colliers, barges, and dredgers, as well as to the large freighters engaged in the American Lake trade. Reference was made in the annual report of Lloyd's Register to steamers of the Monitor type, in which the side plating is in a corrugated form, and also of a new form of watertight bulkhead in which the necessary strength and stiffness are obtained by corrugated plating.

MARINE ENGINEERING.

The number of cargo vessels of moderate size which were built during the past year and fitted with reciprocating engine installations, provides proof that the older form of piston engine still possesses many advantages for every-day work. The extensive employment of superheating in these installations has arisen out of the recognition that the conditions under which a cargo boat is usually operated are favourable for the realisation of the maximum economies associated with superheating devices. The Aotearoa and the Aurania are being fitted with geared turbines; but the direct-driven turbines in the passenger and cargo boat Bingera, belonging to the Australasian United Steam Navigation Company, have been replaced by three sets of four-crank triple expansion engines; the result of the change over is stated to have been an appreciable increase of speed and fuel economy. The combination system of reciprocating engines and turbines has been fitted to the great White Star liner Britannic. There has been a tendency to a greater employment of the Curtis type of turbine. The American battleship California now under construction is to be equipped with electrical transmission; the installation will include two turbo-generator units and four propelling motors, and arrangements will be made through the motor connections for speed variation within fairly wide ranges. Messrs. Beardmore have under construction at their works a Ljungstrom turbine in which a mechanical drive will be employed. The Kangaroo, built last year by Messrs. Harland and Wolff, has propelling machinery consisting of twin Diesel engines of the six-cylinder type, developing 2,250 i.h.p. These engines were constructed on the Clyde by the Burmeister and Wain Oil Engine Company, and the fuel consumption on early trials was stated to have been under 0.3 lb. per i.h.p. Bolinder motors have given satisfactory performances when engaged in the Atlantic trade. The more rapid adoption of internal combustion engines by shipowners is being retarded, not by any actual shortage of oil, but rather by the high prices which this fuel now commands.

INTERNAL COMBUSTION ENGINES.

The demand for stationary oil and paraffin engines, varying in power from 5 h.p. up to 100 h.p., during the past year was very great, and it was not possible to execute all the orders. There is every evidence that immediately the war is over there will be a very great demand for engines of this type for China, India, Australia, and, in fact, for every overseas market. No modifications of any importance were made in the construction of suction gas engines, and the ordinary four-cycle type continues to receive by far the widest application, although an increasing number of two-cycle motors of the Duplex and other types

are constructed. The marine gas engine, so far as this country is concerned, is practically dead, and nothing whatever was done with it during the past year. In Holland there was a marked development in its employment for coastal and river craft, usually of the cargo-carrying variety, and recently a Dutch-built barge with gas engines was put in commission on the Thames. The power which is now possible with a semi-Diesel engine is far in excess of that of a year ago; engines are now built of 150 h.p. per cylinder or 600 h.p. in four cylinders, while motors of 200-300 h.p. are quite common and are turned out in quantities. Of the larger power, however, only the Bolinder type is yet available, but the application of such engines to marine work for large ocean-going cargo vessels marks an important step in the evolution of this engine, the further development of which in 1916 should be one of the features of marine engineering. It is now almost impossible to put all the engines that were originally termed hot-bulb motors in the same class, so radically do they differ in important points of construction, although in outward appearance they are very much the same. In some of the latest designs there is no hot bulb at all, while the water-cooled head is now almost universally adopted, and by other modifications the undesirable employment of the injection of water into the cylinder has been avoided. In the new Bolinder engine, which has been placed upon the market only recently, a small air compressor is fitted which supplies additional air under slight pressure to the top of the combustion chamber, while the ordinary arrangements for the provision of scavenging air are retained. In all engines, however, the blow lamp is still necessary for starting purposes. The first 4,000 h.p. Diesel engines set of the two-cycle type was installed during the last twelve months in a British shipyard, for the provision of electric power; it was constructed by Messrs. Sulzer Bros. in Switzerland and several motors of the same power are being built. Two 3,200 i.h.p. Fiat two-cycle engines were installed in a Brazilian submarine depot ship, while another motor of the same power, but of the four-cycle type, is being built by the Burmeister and Wain Oil Engine Company, of Glasgow. The number of motor vessels completed during 1915 was about 22, approximately the same as in 1914. Of these, six were constructed in this country. Four were built on the Clyde with Burmeister and Wain oil engines constructed in Glasgow, a fifth was the Abelia engine by the Wallsend Shipway Company, and the sixth, the Arabis, with engines of the Neptune Polar type, built by Messrs. Swan, Hunter, and Wigham Richardson. The machinery in the two latter ships was of the two-cycle type. More than 50 large ocean-going vessels are on order, in which Diesel motors are to be fitted.

RAILWAYS.

The most interesting electrification schemes are the high tension direct-current system of the Lancashire and Yorkshire and the Newport-Shildon scheme of the North-Eastern Company, the latter representing the first attempt in Great Britain to operate mineral traffic electrically. Except in the case of the London and North-Western Company, the purely railway portion of the work has consisted of the equipment of a large mileage of existing lines for electrical operation, but the London-Watford scheme includes the construction of a large mileage of new tracks. An interesting undertaking was the improvement of the ventilation of the Woodhead Tunnel on the Great Central Railway. This tunnel, which is over three miles in length, has a maximum depth below the surface of 600 ft., and is constructed at a level of 1,000 ft. above sea level. It consists of two single-line tunnels separated by a wall of rock 14 ft. thick, which is, however, pierced at intervals. The improvement which was completed last year consisted in the opening out of one of the existing shafts to a finished diameter of 16 ft. New locomotive types include the new superheater 0-6-0 and 4-4-0 classes on the North British Railway, the 4-8-0 tank engines for shunting work on the Great Southern and Western, the 2-6-4 tank engines of the Great Central Railway, and the 0-6-4 superheater tank locomotives which have been put in service on the Metropolitan system. In the United States, the "Atlantic" type is now being built to weights of 240,000 lbs., "Pacifics" up to 290,000 lbs., and "Mikado" locomotives up to a maximum weight of 344,000 lbs. It is stated in America that while the normal assumption is that each square foot of heating surface in a coal-burning locomotive will produce 12 lbs. of steam an hour, it is possible to reach 18 lbs. of steam in each square foot of heating surface in an oil burning locomotive.

CEMENT AND REINFORCED CONCRETE.

Reinforced concrete fence posts can, it is stated, be obtained at prices which compete with wood; for instance, 6 ft. posts, 4 ins. square at ground line and tapering to the top, and carrying five to seven wires, are sold at 2s. 4d. each. These are equal in strength to a cross-cut timber post of 4 ins. by 5½ ins. section which would not now be bought under 2s. 9d. each, and they possess greater durability. An expeditious and economical system of building homesteads, cottages and the like is by a combination of concrete posts acting as piers and 4 in. panels of concrete filled in between the posts *in situ*. The posts are grooved on the sides to form a key for the walling, which is reinforced with horizontal and vertical rods or by wire-mesh. Mangers, water troughs, etc., can be constructed on similar lines, with advantage from both an economical and a sanitary point of view.

† Abstracted from *The Times Engineering Supplement*.

(To be continued.)

Electrical Notes.

S. A. INSTITUTE OF ELECTRICAL ENGINEERS: PRESIDENTIAL ADDRESS.

THE valedictory address delivered by Mr. Bernard Price (retiring president) at the annual meeting of the Institute, was as follows:—

In vacating the Chair at the termination of my year of office as President, I desire to briefly review the work of the past session, and to touch upon one or two subjects which appear to me to be of importance at the present time. The Council's annual report has, I think, quite properly been confined to a concise statement of the work done and results achieved, and it is perhaps within my province to draw attention to some of the broader aspects of the work of the Institute.

FUTURE OF THE INSTITUTE.

In the address which I delivered nearly a year ago, I advocated a broadening of the scope of our proceedings at general meetings, and the provision of increased facilities for social intercourse between members. Both these suggestions were adopted by the Council, and whilst the endeavour to elicit discussion on items of every-day practical experience has not as yet been productive, and although in these times of stress it has been impossible to arrange any special function, I think members will agree that a satisfactory advance has been made in the right direction. I hope that, in course of time, our meetings will become the accepted medium for the dissemination of the quantity of valuable experience and data which is being daily acquired by electrical engineers throughout the country. It is my opinion that, under the conditions obtaining in Africa, the Institute should by no means confine itself to the consideration and discussion of papers, but should frame its procedure so as to enable any useful detail of the work and experience of its membership to be brought within reach of every member.

As regards the social side of our activities, much more would have been possible but for the war. The informal gatherings at dinner before monthly meetings have nevertheless been appreciated, and I hope an increasing number will avail themselves of this opportunity for enlarging their circle of acquaintanceship. It has been the desire of the Council that when normal conditions are resumed a scientific conversation should be held, as it is felt that such a function would prove of interest both from the technical and social points of view. I hope that the cessation of hostilities will enable the new Council, or its successor, to carry this into effect, and I feel functions of this kind would prove an interesting and useful feature of our affairs.

INCREASED INTEREST.

Before leaving what I may term the routine work of the Institute, I should like to remark that the average attendance at monthly meetings, including visitors, has been 50 per cent. greater than it was in the previous year. Bearing in mind that many members are serving with the forces or are engaged on other national work and that additional duties are thus thrown on those remaining here, this improved attendance at our meetings is indeed a very healthy sign, and is clear evidence of the fact that a more active interest is being taken in our proceedings. The list of those who contribute to discussions is, however, still confined to a relatively few names, and I would make a special appeal to those who are timid to come forward and assist in the elucidation of the various problems raised. I hope also that we shall receive an increasing number of written contributions from country members who are unable to attend in person. It is also very gratifying to note that a substantial sum has been added to the accumulated funds during the year. I look to the day, however, when the Institute will be in a position to set aside a much larger amount for meeting expenditure upon the special work which it should perform if it is to justify the position to which it aspires.

MEMBERSHIP.

In this connection, I would like to refer to the efforts which the retiring Council has made towards augmenting the membership. If the Institute is to attain to the position it deserves, and which the growing importance of the profession demands, it behoves every electrical

engineer, and many others who belong to allied professions, to join our ranks and add their quota to the work we desire to carry out. It has been felt that, in spite of the difficulties consequent upon the war, the present is an opportune time to make a very real effort to enlarge the membership of the Institute, and incidentally to thereby increase its funds. As you are aware, we have issued an illustrated pamphlet setting out the aims and objects of the Institute and giving full particulars of the conditions governing membership. Copies have been sent to every member of the Institute, and to a large number of engineers and others throughout the country to whom our work should appeal. Each member of each grade can render valuable assistance in this direction. Those, in particular, whose business may take them abroad should make it a practice to carry copies of the application form, and of the pamphlet, for distribution to acquaintances in outlying districts, and the Secretary should be supplied with the names and addresses of possible applicants so that he may send them a sample copy of the "Journal." No apology is necessary for thus soliciting the co-operation of our conferees in the profession, because it is the aim of the Institute not only to assist its membership through the channel of its technical proceedings, but also to play a useful part in all matters which pertain to the electrical development of the country and the well-being of the profession.

DEVELOPMENT OF RESOURCES.

This brings me to the broader aspects of our work. The most ambitious undertaking upon which the Institute has yet embarked is an investigation of the possible development by electrical means of the natural resources of the country. I do not think it will be necessary for me to emphasise the very great importance of this question. It has so appeared that consideration of the establishment of new industries has recently received an added stimulus. The war and its effects upon the importation of manufactured articles and commodities to this country has naturally directed attention to increased utilisation of local resources, and the Government has appointed an influential Committee to consider the whole matter. The formation of the Government Munitions and Industries Committee has therefore provided the necessary machinery for the assimilation and utilisation of the data and information that has been worked up by the Institute's Committee, and it is hoped that the report on electro-chemical industries, which has just been completed and which is already in the hands of the Government Committee, will be the means of accelerating the establishment of such industries in this country. The subject opens up a very wide field, and urgently calls for comprehensive and carefully organised investigation into the geographical distribution and chemical properties of a number of the raw materials requisite for such industries. Work of this kind is beyond the scope of this Institute, but it is hoped that the Munitions and Industries Committee will see its way to recommend the Government to prosecute such an investigation at the earliest possible moment. The present time is particularly opportune, and there is no time to be lost. If the British Empire and her Allies are to consolidate the victory which they will surely gain over their enemies, a victory which will only be won at terrible cost, it is imperative that they should organise industry on new lines.

COMING TRADE WAR.

The industrial and commercial war, which must inevitably be waged when hostilities cease, will demand an organised effort and the application of scientific and modern methods to every phase of industrial life. It is all very well to advocate a boycott of enemies' goods, but however effective such a policy may be while the horrors of war are fresh in everyone's memory, we must place our industries in a position to compete successfully on intrinsic merit if we are to permanently retain supremacy in the markets of the world. I do not propose to attempt to enlarge upon such a vast and difficult subject—it is one which primarily concerns home countries—but it is reassuring to note that the matter is already receiving serious consideration, and particulars of a suggested scheme, proposed by the Committee of the Engineers' Club in Manchester, will be found reported in the "Electrician" for November 26th, 1915. We in this country can do our share by developing our own resources wherever it is profitable to do so, and by lending our whole-hearted assistance, both individually and as a technical institution, to any scheme which may be evolved for the better organisation of the industry and commerce of the Empire.

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TRAINING OF ENGINEERS.

One most important factor in the problem is the education and training of engineers, because the efficiency of the industrial and commercial machine must ultimately depend to a very large extent upon the skill of those who control it. I ventured to refer a year ago to the disabilities under which this country suffers in this regard, and I hope the Institute will embrace every opportunity for imbuing a more serious outlook into the minds of the youthful generation. This is certainly a direction in which all of us who employ young men can serve the profession and the country to which we belong. In conclusion, I would say that I am very optimistic as to the future prosperity of the Institute. Africa is a young country, possessing almost infinite possibilities, and we, as electrical engineers, know the important part which electricity has to play in the development of those possibilities. The example of other countries is being daily impressed more vividly upon our minds, and it must surely be only a matter of time before rapid strides will be made in the opening up of the vast resources now lying dormant. It must be the ambition

of the Institute to foster and stimulate, in every possible way, the consummation of this ideal in the interests both of the country and the profession it represents. We are now laying the foundation upon which we hope to build up a really powerful and influential body, truly representative of the profession in South Africa, and I feel convinced that it only remains for electrical engineers to realise the duty they owe to the profession to double and treble the strength of the Institute. I feel deeply honoured to have been one of the early Presidents of an institution for which I foresee such an important future, and I need hardly say that I shall continue to forward its interests to the best of my ability. In conclusion, I desire to record my very sincere appreciation of the whole-hearted manner in which each member of the Council has co-operated with me during my year in office. The able assistance so cordially and liberally offered by my colleagues on the Council, and by our worthy Secretary, has lightened the work greatly, and has rendered my position a very pleasant one. I will now ask Professor Buchanan to take the chair, and in so doing I wish him and the Institute a very successful year. May 1916 surpass all previous records!

South Africa and Belgian Goods.

Imperial regulations concerning any traffic between Belgium and the Union of South Africa are embodied in a notice which has been published in the *Government Gazette*. This pronounces that:—In respect of the Union of South Africa, agents, resident in the United Kingdom, of Union importers, must apply for a licence from the Board of Trade to import goods from Belgium with a view to their transshipment to South Africa. This licence will only be granted subject to the High Commissioner receiving the following undertakings: (a) (i) An undertaking in respect of each consignment that the exporter will pay the purchase money into a special account, in the name of the Consular agent, in a bank in the United Kingdom, and will, when called upon on behalf of His Majesty's Government, furnish evidence of such payment within a reasonable period; (ii) An undertaking by the bank that, so long as the enemy occupation of Belgium continues, no money will be allowed to be withdrawn from such special account, and except under licence given on behalf of His Majesty's Government, and that no charge on the account will be allowed or recognised without such licence; (b) an undertaking that the goods are sent either direct from Holland or, if sent via the United Kingdom, on through bills of lading and entered on arrival in the United Kingdom for immediate exportation under the transshipment regulations; (c) an undertaking that the conditions and formalities prescribed by the Union Government in connection with the importation of goods of Belgian origin into South Africa are complied with. The conditions and formalities referred to in paragraph 3 (c) are as follows: (a) The production of a Consular certificate of Belgian origin, if certificate of origin would be required for the goods in question if they were imported from Holland; (b) an undertaking by the importer that he will make no payment for goods except to the said agents or exporters. In cases in which goods of Belgian origin are shipped from Holland to the Union, without the intervention of any person in the United Kingdom, on through bills of lading, it shall be necessary for the provisions of the undertakings in clauses (a) (i) and (ii) to be complied with by the importers in the Union. Moreover, importation will only be allowed subject to the observance of the conditions and formalities required under clause 4, and subject to the production of the necessary certificate of origin and subject to the same undertakings being given by the importer and bank as are referred to in clauses (a) (i) and (ii), with a substitution of a bank in South Africa for a bank in the United Kingdom and the Union Government for His Majesty's Government.

Swaziland Ranching.

The Swaziland Ranching and Development Co., Ltd., was formed in September, 1912, for the purchase of Block U28, Swaziland, in extent forty thousand morgen. Mr Allister M. Miller, than whom no one is better known in that fertile country, was appointed local director, and took up his residence on the property. In October, 1913, the adjoining block, Searforth, also covering an area of forty thousand morgen, came into the market. The directors of the company, whose prescience enabled them to see the potentialities of the land, immediately acquired the additional property. In this way there came into being one of the most promising ranching schemes within recent times in South Africa—a scheme in which, be it added, the general public can to some extent participate. This, however, necessitates some explanation. The payment of the price for Searforth was not anticipated when the company was formed, and the result was an inability to purchase the number of cattle originally agreed upon. It is for the purpose of further stocking the extensive range that the directors are now issuing 1,000 debentures of £25 apiece bearing interest of six per cent. per annum, payable half-yearly.

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An important dispatch has been sent to the Australian Premier from the Trade Commissioner to the East, stating that it has been brought to notice that certain German firms in Japan have commenced doing business in Japanese names, the following being the cases so far brought to notice, the Japanese name being given in parentheses:—Yokohama: Winckler & Co. (T. Miyabe), Bergmann & Co. (Nigo Shoten), Otto Reimers and Co. (Asada Shokai), Becker & Co. (Kato Gomei Kaisha). Kobe: Bergmann & Co. (Sawada & Co.), M. Raspe & Co. (Kato & Co.), Becker and Co. (Toyo Bussan Export Co.), Carlowitz & Co. (Takashito), Winckler and Co. (Kubota Exporting Co.), Van Nierop & Co. (Tanaka T. Goda), V. Hermann, of Siemens, Schuckert & Co. (Kassai & Co.). The dispatch proceeds: "It is highly probable that other German firms will do likewise, and endeavour to carry on business as usual with Australia and other British possessions. The Japanese laws, so far, afford no means of preventing trading with enemy subjects, but may, later on, come into line. As it is highly probable that the German firms above referred to, as also others, may endeavour to continue business with Australia under the cover of Japanese names, I advise that the strongest measures be adopted in Australia accordingly, and that the Commonwealth authorities should be approached on the matter."

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The Week's Meetings.

THE GOERZ GROUP.

MODDER DEEP LEVELS.

The 15th ordinary general meeting of shareholders in the Modderfontein Deep Levels, Ltd., was held in the board-room, Silesia Buildings on May 23. Mr. H. Newhouse presided, and there were also present Messrs. B. H. Davis, W. Gordon, V. J. Ronketti, W. Ross, W. R. Crowhurst, H. C. Boyd, P. R. Lynch, A. C. L. Olsen, J. R. Nicholson, G. C. Fitzpatrick, and F. W. Baxter, with C. L. Chalmers (secretary), representing personally and by proxy 185,782 shares out of an issued capital of 500,000 shares.

In moving the adoption of the directors' report and the audited statements of accounts, the chairman said:—The directors' report and accounts, together with the reports of the consulting engineer and general manager, in respect of last year have been in your hands for some time, and will have confirmed what you no doubt gathered from the monthly and quarterly reports which have been regularly issued that the period was marked by uninterrupted progress. The result of the year's work, from a financial point of view, is that a working profit of £338,429 was obtained from a milled tonnage of 390,000. The yield at 34s. 5d. was quite satisfactory, remembering that it was influenced by the initial absorption of gold in the plant, and the costs at 17s. 1d. are distinctly on the low side, particularly in view of the fact that during the year the cost of stores, gold realisation charges, etc., increased considerably. Adding to the figure of profits earned a small sundry revenue of £576, and deducting the Government taxes as well as working expenses during the short period the mill was running in 1914, during which time you will remember no gold was obtained, and sundry other outgoings, a net profit of £283,302 remained. From this was deducted the capital expenditure during the year and the balance of capital expenditure incurred prior to January 1, 1915, and not provided for out of working capital, whilst the normal stock of stores and the permanent investments of the company have also been put to capital account. These amounts absorbed altogether £69,794. Dividends totalling 35 per cent. and absorbing £175,000 were declared, and £37,507 was carried forward to the current year's account. This, you will admit, is a thoroughly conservative method of dealing with the large profits earned.

'War Levy.

The special war levy, amounting approximately to half the profits tax, is included in the charges mentioned. This levy has been reimposed for the current year, but I sincerely hope that it will not be again imposed. During the first four months of this year the total tonnage milled was 136,900, value £253,881 (yield 37s. 1d. per ton), and the cost 16s. 8.9d. per ton, giving a working profit of £139,257. The working profit in March at £37,070 reached a record. The falling off in April was, of course due to the fact that there were three working days less than in March. The profits reached approximately £35,000 in July last, and have since been maintained at round about this figure. The progress of the company was so satisfactory that in July of last year your then consulting engineer, Mr. Cameron, was able to recommend an increase of the plant to a total capacity of 40,000 tons per month. The cost of this increase was put at £23,000, but some excess on this figure must be anticipated, owing to the extra charges due to the war. On the other hand, I am very glad to be in a position to state that the original estimate as to the date of completion, viz., next month, will be adhered to, and very soon thereafter the effect of the additional tonnage should be reflected in the profits.

You will note that the capital expenditure this year was estimated not to exceed £24,000, and I hope that this figure will not be exceeded. Under the circumstances you can with confidence anticipate in respect of the first half of this year a larger dividend than that declared last December.

Ore Reserves.

The course of development last year, and since up to date, has continued to be very satisfactory, as is indicated by the fact that the ore reserves at December 31 last showed an increase of 220,000 tons over the total at the commencement of crushing. The value, too, was 0.3 dwts. better at 8.3 dwts., while the stoping width was 4 inches up at 73 inches. The total reserves in hand at the beginning of the year, of 2,670,000 tons, are very large, and provide rather more than five years' reserve for the increased plant. Nevertheless, your directors have considered it wise to take advantage of the present ample native labour supply to do a considerable amount of development monthly. In order not to burden the current year's accounts, and therefore present shareholders, unduly, it has been decided, as from March 1 last, to carry to a suspense account any amount spent in excess of 1s. per ton milled which is being charged to working costs. That this is ample appears from the fact that the charge to working costs on development was in 1915 only 8.12d. per ton milled. A study of the balance sheet will show you that at the end of the year the total value of stores carried was no less than £28,588. A comparison with the pre-war period in the case of this company is impossible, but you will readily realise that this is much in excess of normal requirements. Your board, however, is distinctly of opinion that it is better to err on the side of safety in this respect. I am pleased to be able to inform you that the Bank of England has arranged, in respect of all gold deposited since the commencement of the war, and also in respect of gold to be deposited in future, to pay to the companies 98½ per cent. of the estimated value immediately on its receipt. This concession is of considerable importance, as it means the release of no less than £15,629 for the use of the company. The balance retained—namely, 14 per cent.—should, on present experience, be sufficient to cover the charges in connection with the dispatch of the gold to London. A considerable proportion of your company's employees is on active service, and either they or their dependents are receiving support from the company. The total number of men so occupied is 38. The allowance to these men amount to £268 per month. Mr. Cameron, who was consulting engineer to your company during the whole of its construction period, resigned his position, to the regret of the Board, at the end of February last, and was succeeded by Mr. Madew. The best testimonial to his services is the smooth and satisfactory running of the mine. As I have said on a previous occasion, it is a rare occurrence for a mine to make headway with so little interference from what I might call defects in construction. I regret to inform you that, after being a director of the company for many years, Mr. Gordon Sandilands resigned in November last. His place was filled by the appointment of Mr. H. C. Boyd, which you will be asked to confirm.

Mr. Lynch seconded the motion, and the report and accounts were adopted.

The appointment of Mr. H. C. Boyd as a director in the place of Mr. Gordon Sandilands (resigned) was confirmed.

Messrs. V. J. Ronketti and H. C. Boyd were re-elected to the directorate.

Mr. Charles Stuart and Messrs. F. W. Diamond and English were reappointed auditors.

MAY CONSOLIDATED.

The 30th ordinary general meeting of shareholders in the May Consolidated Gold Mining Co., Ltd., took place in Silesia Buildings on May 23. Mr. H. Newhouse presided, and others present were Messrs. W. Dalrymple, J. Munro, W. Ross, W. R. Crowhurst,

G. C. Fitzpatrick, F. C. Dumat, and V. J. Ronketti, representing personally or by proxy 22,195 shares out of an issue of 283,750 shares.

The Chairman said:—Gentlemen, My anticipation of last year have been more than fulfilled. The tonnage crushed in 1915 actually shows an increase of 23,470 over the previous year, whilst the profit, thanks to this factor, a small improvement in yield and a somewhat larger decrease in costs, was, at £10,030, nearly double the 1914 figure. Since the turn of the year, an additional £3,630 has been earned. Mr. Cameron, the company's late consulting engineer, in his report, makes it clear that this result is due to an ample supply of native labour and water—the latter a possible difficulty almost peculiar to this mine—and, providing these factors continue favourable, it is anticipated that the mine will continue production probably for another 12 months. As, however, there are no measurable ore reserves left and the margin between yield and costs is very small, this estimate may easily be upset through the occurrence of some at present unforeseen difficulty. In any event, it is only natural to anticipate that profits will be a gradually diminishing quantity. As I stated last year, your main asset is your holding in the Modderfontein Deep Levels Limited, which remains unchanged at 28,875 shares. This property is fulfilling expectations. A first dividend of 10 per cent., after only six months' crushing, was declared in June last, the second dividend, declared in December being 25 per cent., whilst the third, to be declared next month, should be still higher. The development of that property in every respect is progressing satisfactorily. You will have gathered full details of the work done from the annual report which has been circulated to you, while the company's position at date is disclosed in the copy of the proceedings at the ordinary general meeting, which will be circulated together with the proceedings of this meeting. As a result of the dividends received from the Modderfontein Deep Levels Limited, your board was able to declare a dividend of 5 per cent. in respect of last year and, as further profits accrue and additional dividends are received from that company, your board will have to take into consideration the question of their disposal. Recently, arrangements have been made with the Bank of England by which 96½ per cent. of the value of all gold deposited is paid out to the companies, instead of 97 per cent., as from the beginning of the war in August, 1914. Needless to say, this arrangement is much appreciated, and, judging from present experience, the balance of the 14 per cent. retained should be ample to cover all expenses of shipment. Owing to the difficulties and delays of shipment it has been thought advisable to increase the stock of stores and material, the amount held being valued at £6,906 at 31-12-15 against £3,848 at 31-12-14. As you will see, the total number of white men employed on your mine, including staff and apprentices, is only 76. Nevertheless, 14 are on active service, a record which I am sure you will consider satisfactory, the monthly payments to them and their dependents being £111.

As I have already indicated, Mr. Cameron is no longer your consulting engineer. He resigned his position at the end of February of this year, and Mr. Madew was appointed to succeed him as from March 1st. Mr. Cameron, as manager and consulting engineer, was connected with your property for a period of 12 years and no company has ever been better served. I am sure you will agree with your board in wishing him all success in his future career. That the mine is still running reflects, as Mr. Cameron states, the very greatest credit on the manager—Mr. Sartorius—and his staff, and your thanks are due to them.

On the Chairman's motion, the report and accounts were adopted.

Messrs. S. B. Joel and F. G. C. E. Robellaz were re-elected to the directorate.

Messrs. F. W. Diamond and English were reappointed auditors.

PRINCESS ESTATE.

The ordinary general meeting of shareholders in the Princess Estate and Gold Mining Company, Ltd., was held in Silesia Buildings on May 23rd. Mr. H. Newhouse presided, and there were also present Messrs. V. J. Ronchetti, W. R. Crowhurst, F. C. Dumat, G. C. Fitzpatrick, J. H. Keegan, F. C. Meeser, W. Ans'ey, and J. H. Ryan, representing personally or by proxy 175,878 shares out of an issue of 575,033 shares.

In moving the adoption of the report and accounts the chairman said:—Gentlemen,—When last it was my privilege to address you I had some hope that the position of the company would be improved as a result of the work then in hand—a hope which has, unfortunately, not been realised. Reference to the accounts will show that the working profit for the year fell to under £1,000, a result which is principally due to an increase in the working costs of 1s. 2d. per ton milled as compared with 1914. This rise is due to circumstances beyond the control of the management, and, in the main, directly to the war. Under this category are increased expenses for the mine services, increased cost of white labour owing to war bonus, payment to dependants of men at the front, and increased charges for gold realisation. As against these factors, the lower yield by less than 4d. per ton milled was of comparatively small importance. In addition to the working profit of £916, the sundry revenue amounted to £4,123, whilst sundry expenditure (including interest on advances, but excluding capital expenditure) totalled £2,239. Capital expenditure totalled £19,107, an amount which was debited direct to profit and loss account in view of no share for depreciation being made. As a result, the credit balance of profit and loss account is reduced from £32,470 to £2,999. The net liability of the company is, however, not affected to the full extent of this decrease, as development was curtailed owing to a shortage of funds, with the result that £6,378 was recovered through working costs in excess of the amount spent. It follows that the net liabilities were only increased £1,705 to £15,122. Since the turn of the year the results have shown no improvement, the net working profits for the first four months totalled only £74. Indeed, in March an actual working loss of £407 was incurred. The development work done is detailed in the report of the consulting engineer and manager. The effect of the restriction of development, due to the stringency of the financial position, is reflected in the decrease of 65,000 tons in the total reserves—from 553,000 tons, assaying 71 dwts over a milling width of 89.2 in, to 488,000 tons assaying 67 dwts over a milling width of 29.7 in. Since the close of the year last year has continued on the same lines as those adopted in 1915, and with results of similar character. As signified in Mr. Cameron's report, the continuance of this policy is bringing the company to a

critical stage and it has been the duty of your board, in consultation with Mr. Madew, who replaced Mr. Cameron, as consulting engineer, on March 1, to take into consideration the future policy of the company.

Future Policy.

Shortly put, the position is that—owing to the precarious financial position of the company and the ever decreasing margin between revenue and expenditure—the amount of development done in the past has been insufficient, and a point has now been reached when the possibility must be taken into contemplation of the ore reserves decreasing to such an extent as to make it not feasible to continue crushing operations. To remedy this state of affairs very heavy expenditure on capital and development accounts, totalling over £150,000, would have to be incurred and, judging by what is known of the mine, it cannot be expected that, with the high level of working costs, the ore to be disclosed by such expenditure would leave any appreciable profit. Indeed, it is more likely that, taking everything into account, it would leave a loss. Under such circumstances the necessary capital would be difficult enough to obtain in normal times and, under present conditions, its provision is, as far as the board can see, out of the question. Certainly, the terms would be prohibitive. It follows that the board has had no alternative but to decide to suspend development except in so far as to make fully available for stopping all known pay ore. Working on this basis operations can be continued for some time. Whether in the interval circumstances may change remains to be seen so that it would be premature to-day to abandon all hope of improvement. It is unnecessary to add that capital expenditure is being restricted to the lowest possible figure. At date the company owes Messrs. A. Goerz and Co., Ltd., £15,841 as compared with £19,248 at December 31, 1915. I expect to see this debt substantially reduced by the end of the year. Here I would point out that, were it not for the war, the debt would be less, as the stores and material on hand have, for safety's sake, had to be increased from £12,114 at the end of 1914 to £17,754 at the end of April, 1915. In spite of the company's difficult financial position, your directors have thought it right to allow a certain number of men to go on active service, the mine supporting their dependants. This involved an outlay of £916 in respect of the German South-West African campaign; and there are at present 27 men on active service and the amount payable to them and their dependants is £150 per month. As already mentioned, Mr. Cameron resigned his position as consulting engineer soon after the turn of the year and Mr. Madew was appointed to succeed him. Mr. Cameron was consulting engineer to the company for a period of nearly eight years and his work for it—which was always arduous—deserves your highest commendation. Your thanks are also due to Mr. Anderson and his staff. Mr. Anderson has been manager of your mine for nearly five years, struggling continuously against adversity. He leaves the property in a few days' time to take over the management of another concern. As his successor your directors have appointed Mr. Albert Smith, who for years has been underground manager on the mine and is thoroughly conversant with it.

The report and accounts were adopted. The appointment of Mr. R. des Claves as a director in the place of Mr. Clement Davies (resigned) was confirmed.

Messrs. G. Sonn and F. G. C. E. Robellaz were re-elected to the directorate.

Messrs. C. L. Andersson and Co. and Messrs. F. W. Diamond and English were reappointed auditors.

GEDULD PROPRIETARY MINES.

The 15th ordinary general meeting of shareholders in the Geduld Proprietary Mines, Limited, took place on May 23rd, when there were present:—Messrs. H. Newhouse (chairman), V. J. Ronchetti, W. R. Crowhurst, F. R. Lynch, G. Falcke, F. C. Meeser, H. C. Boyd, A. C. A. Olsen, J. R. Nicholson, A. Sprinz, W. T. Birch, C. E. de Beer, J. H. Keegan, and A. S. Pearse, representing 148,617 shares, personally or by proxy, out of an issue of 970,000 shares.

The Chairman, in moving the adoption of the report and accounts, said:—Gentlemen,—A year ago I foreshadowed that the results for 1915 would show a decided improvement, as compared with those for 1914, and I am glad to say that my anticipation has been carried into effect. The tonnage milled, 303,440 tons, was practically up to the capacity of the plant, and showed an increase of 58,855 tons. The yield was somewhat lower, but this decrease was much more than balanced by a reduction in working costs of 2s. 10.1d. to 21s. 6.8d. per ton. As a result the working profit at £141,410 showed an improvement of £44,445, whilst sundry revenue was up to £2,777. The decrease in working costs, though expected, is noteworthy, in view of adverse circumstances due to the war, the chief of which are, of course, the increased cost of stores and the extra expense of gold realisation. The profits for the year were also swollen by the decision of your board to transfer to profit and loss account the remainder of the reserve gold not used up during the year, equivalent to a value of £18,758. As against this sundry expenditure, mainly taxes and donations, has to be debited, the net balance remaining for transfer to appropriation account, being £151,508. Dividends totalling 10 per cent for the year were declared, the balance unappropriated and carried to the balance sheet being increased from £110,474 to £163,182. At the end of last year there was an option outstanding over 47,500 shares at 25s. per share. This was duly exercised at its expiry, bringing the issued capital to £970,000, and leaving 30,000 shares free for the directors to deal with. Out of the working capital provided by the exercise of the option just mentioned £13,236 was in hand at the end of the year, thus making it unnecessary to encroach upon the profits earned during the year to meet capital expenditure. It follows that the whole of the amount carried forward is available in cash, and, together with the balance of working capital already mentioned, can be used for the expansion of the company's operations. Acting on the advice of the then consulting engineer, your board decided in September last to take in hand immediately an increase in the capacity of the reduction works of such an extent as to enable 40,000 tons to be dealt with monthly, and to authorise what, of course, was complementary to this decision, a programme of expansion underground. Good headway has been made with this programme, for the remarkable improvement in the native labour position which I noted a year ago as having taken place in the previous January—has I am happy to say, continued, though at present, while still quite satisfactory, it is not so marked as at the beginning of this year. Thanks to it the ore reserves at the end of 1915 again showed an improvement of 200,000 tons to 2,100,000 tons, while the value at 7.7 dwts, was no less than 9.6 dwts, the stope width remaining the same at 59.1 inches. It is interesting to note that this tonnage stands in the books at only 1s. 8.3d. per ton of developed ore, while the amount being written off for development is 3s. 9d. per ton milled, or about 2s. 7d. per ton mined.

The New Plant.

Progress on the surface is keeping pace with that made underground. As indicated in the consulting engineer's report, it was expected that the new plant would be ready next September, but delays, directly consequent upon the war, will prevent this programme being carried out. It is, however, still reasonable to hope that the new plant will be put into

commission before the end of this year, though it is too early to be definite on this point. Needless to say, this programme involves the company in heavy capital expenditure, and it is probable that the great bulk, if not the whole, of the amount carried forward at the end of last year, together with any profits earned this year in excess of the amounts to be distributed in dividends, will be absorbed by the time it is completed. This expenditure, however—I refer particularly to the proportion of it spent underground—serves not only to prepare the mine for the extension to a capacity of 40,000 tons per month now in hand, but has in view the further extension of the mill. This point, you will remember, was made clear when announcing the intention to undertake the present increase. It was then stated that the new work would be so planned—and this refers, of course, both to surface and underground—as to permit of easy further extension. When the new plant is in commission a considerable increase in profit is to be anticipated, not only as a consequence of larger tonnage crushed, but also owing to the decrease in working costs which should then take place if only because of the distribution of the standing charges over a larger tonnage. For instance, at the end of last year pumping expenses amounted to no less than 2s. 7d. per ton milled, a considerable increase, due to a large additional inflow tapped in November last, which now shows some signs of diminishing. The consulting engineer's report shows that the cost of pumping was £6,275 higher than in 1914. Obviously, pumping expenses do not increase with the tonnage crushed, so that this item of expenditure—which I have taken only as an example—calculated per ton milled will decrease as the tonnage treated increases, provided the cost of raising the water remains the same. While the monthly profits for last year averaged £11,794 they reached £13,555 per month in the December quarter. For the first four months of this year some improvement has been shown, the tonnage milled during that period being 102,540 and the working profit £56,119, an average of £14,030 per month. This increase of profit was obtained owing to an increase in the yield. Working expenses during this period were further influenced directly and indirectly by the war and averaged 22s. 2.6d. per ton or nearly 8d. per ton more than in 1915. Development has continued normal, though its speed has been somewhat interfered with since November last by the inflow of water referred to which, as mentioned by the manager, temporarily drowned out levels Nos. 3 and 4. No. 3 level was unwatered some time ago and the unwatering of No. 4 level will be completed very soon. The special war levy, amounting approximately to half the profits tax, is included in last year's charges. This levy has been reimposed for the current year, but I sincerely hope it will not be again imposed. As a measure of safety under the circumstances now existing stores and material on hand have been increased, their value having risen from £16,854 at the 31st of December, 1914, to £34,675 at the 31st of December, 1915. I am pleased to be able to inform you that arrangements have now been made with the Bank of England for the receipt of 93½ per cent. of the value of all gold deposited in place of the 97 per cent. which has been received since August, 1914. Naturally, this arrangement is much appreciated and, judging from present experience, the balance of 1½ per cent. retained should be sufficient to cover shipping and insurance charges.

Health Conditions.

I have on previous occasions referred to the efforts which are being made at your mine, as well as, I think, at every other mine on the Rand, to improve health conditions generally and reduce the number of accidents which take place. Included in the campaign of the industry to this end was the offer of a special prize to the mine showing the greatest

proportionate reduction in its accident death-rate, this offer being made through the "Safety First" Committee. I am pleased to say that this prize was won last year—the first of its institution—by your company. Needless to say, every effort is being made to repeat this success. I am firmly of the opinion that the friendly rivalry induced by the offer of these prizes makes for a better state of affairs and must in due course influence, even more than it has done in the past, the conditions from a health and safety point of view. That such influence has already been felt is vouched for by the best of all judges—namely, the Government Mining Engineer. In common with the other mines on these fields your company has permitted such of its white employees as wished to go and could be spared to enlist for active service. At present there are 31 away on this account, and they or their dependents are being paid a total of £270 per month. During the military operations in German South-West Africa last year 31 of your company's men were in the fighting ranks, and the total amount paid them or their dependents was £717. I regret to inform you that, after acting as consulting engineer to your company from a date shortly prior to the commencement of crushing, Mr. Cameron resigned his position at the end of February last. Your very sincere thanks are due to him for the eminent services he has rendered. He is succeeded by Mr. Madew. I am also sorry to announce that Mr. Womble, who has managed your mine during the last five and a half years, is resigning his position at the end of this month. Your thanks are due to him and also to the staffs of the consulting engineer and manager. Your board has appointed as Mr. Womble's successor Mr. Anderson, who has managed the Princess Estate and G.M. Company, Ltd., with outstanding ability during the last four years. During the year Mr. B. Davis resigned from the board, and Mr. H. C. Boyd was elected to fill the vacancy, which appointment you will later be asked to confirm.

The report and accounts were adopted. The appointment of Mr. H. C. Boyd as a director in the place of Mr. B. H. Davis (resigned) was confirmed. Messrs. H. Newhouse and H. C. Boyd were re-elected to the directorate.

CONSOLIDATED MINES SELECTION.

The 20th ordinary general meeting of the Consolidated Mines Selection Co., Ltd., was held on April 26th, at Winchester House, Old Broad Street, London, E.C., Mr. Walter McDermott (the chairman) presiding.

The secretary (Mr. Charles W. Moore, F.C.I.S.) having read the notice convening the meeting and the report of the auditors.

The Chairman said: Gentlemen, I beg to move: "That the directors' report, balance-sheet and profit and loss account, as presented, be, and they are hereby, approved and adopted." I assume you will agree to take the report and accounts as read; and I will select for mention from the latter a few items which will establish the general financial position of the company before referring to some of our special interests on which future operating results will largely depend. The directors' report sets out fully how the profit for the year of £81,422 6s. is arrived at, and also the disposition to be made of it and of the £12,548 10s. 1d. carried forward from last year, subject to the approval I shall ask from you later of the payment of a dividend. The amount of £6,802 10s. written off sundry accounts is relatively small as compared with losses we have taken in former years; and it is, perhaps, absolutely small for a live business of the nature and extent of the company's operations, considering the strict method of valuation

of assets which we employ. I referred to this matter of writing-down at our last year's meeting, when a much larger figure had to be explained, and as the yearly valuation of assets is largely dependent on the very uncertain standard of a market quotation at the end of the year, we are fortunate in these times that figures are so little affected. The expenses of operating, £6,919 19s. 6d., are very reasonable, and represent the difference between all expenses in Johannesburg and London and the income derived from services rendered in the management of our subsidiary companies. From the profit of the year it is proposed to allot £10,000 to reserve account, which will then stand at £45,000. This last sum is only one part of the real total reserve covered by the balance-sheet, because the shareholdings of the company are in the accounts at a valuation considerably below their market quotation on December 31st, and this margin is still greater to-day after the marked rise which has lately taken place in some of our assets. It has been our custom to keep in hand, for any new business offering, a very substantial sum in cash and cash assets, and these amounted to £197,511 at the date of making up the accounts. Sundry debtors stand at £61,836 9s. 3d., against creditors of only £39,638 6s. 8d. Debentures have been reduced to the present outstanding amount of £102,300. Assuming that you will agree to the proposed payment of a dividend of 15 per cent., there will be a carry-forward into the current year of the balance of £12,115 16s. 1d. profit.

SPECIAL MINING INTERESTS.

The past year has been a most interesting as well as a fortunate one for some of our special mining interests, to which I will now refer. At the Brakpan mine the improvement which occurred in the developments during 1914 was continued throughout 1915, as the following figures from the engineer's report will show. The total length of development work was 23,179 ft., of which 17,458 ft. were on reef which averaged 13.36 dwt. over 30.25 inches, as compared with the previous year's average on 17,773 ft. of reef of 7.36 dwt. over 35.69 inches. Omitting such portions of the reef as will be left in the mine owing to their lower value, the profitable portion exposed by the year's development shows an assay value of 22.72 dwt. over 32.10 inches. This assay value does not represent the ore as it goes to the mill, because waste rock is broken with the reef in mining, and hand picking then eliminates some of this waste. The general result of the development work was to add 1,205,000 tons to the ore reserve of the mine, and as 725,168 tons were extracted and sent to the mill, there was a net gain to the reserve of 479,832 tons for the year 1915. The total profitable ore reserve of the mine was estimated at December 31st to be 3,017,000 tons of an average value of 7.56 dwt., or 33s. per ton, over the stopping width, which is 1.13 dwt., or 4s. 9d. higher per ton than the reserve was taken at in the previous year. The working profit was £347,021 from the 725,168 tons milled. Dividends Nos. 7 and 8 of 40 per cent. on the capital of the Brakpan Co., and aggregating £300,000, were paid. The first quarter's development for 1916 is very satisfactory in the width and grade of the profitable ore exposed. The working profit for the quarter shows some increase over the rate for 1915, and the satisfactory average grade of the total ore reserve justifies the engineer in anticipating an improvement for the whole year.

THE SPRINGS MINE.

The Springs mine has developed well during the past year. The percentage of profitable to unprofitable ore has been very satisfactory, and the openings in the

former class have shown an average assay of 27.85 dwt. over 23.68 inches width of reef. The ore reserve at December 31st was estimated to be 1,125,000 tons of an average grade of 10.4 dwt. over an assumed stoping width of 57 inches, and this shows an increased tonnage for the year of 572,000. Considering the short time the mine has been actively developed, the tonnage opened is a large one, and the value is higher than we had dared to calculate on. The first quarter of 1916 has increased the reserve of ore to 1,314,000 tons, so that before the mill is ready to start there will doubtless be well over 1,500,000 tons of high-grade ore opened in the mine. The new mill is of 60 stamps, with an anticipated capacity of about 30,000 tons monthly, and it is expected to be running towards the end of the year, unless deliveries of machinery are greatly delayed by the war conditions now affecting all manufacture and transport. The Transvaal Coal Trust made less profit on its coal mining but more on its shareholdings than in the preceding year, and paid dividends amounting to £115,974, or 4s. 3d. per share. The large holding of Springs Mines shares will increase the income of the Transvaal Coal Trust in the future, and this, added to the dividend return from Brakpan and other interests connected with gold mining, will radically change the original character of the company. In view of this change, your directors have decided to recommend the adoption of a new name more in keeping with the company's present objects than the old name and the provision of means for raising additional capital for taking fuller advantage of the opportunities the company has for extending its operations. As we have a very large number of shares in the Transvaal Coal Trust, we are, of course, much interested in its policy, and the changes placed before the shareholders of the Transvaal Coal Trust for their consideration appear to us to be desirable.

TERMS OF PROPOSED ARRANGEMENT.

I will give you briefly the terms of the proposed arrangement. The name of the Transvaal Coal Trust will be changed to the Rand Selection Corporation. Our company agrees, for a period of ten years, to offer participations of at least 25 per cent. of any new business it may acquire in South Africa, and on equal terms, and to provide any additional capital which the company may require by interest-bearing loans, as and when needed in Johannesburg, up to £300,000. As a consideration, we are to receive an option for five years on 100,000 new shares of the Rand Selection Corporation at £3 5s., the proceeds of any shares called by us to be applied to the repayment of any loans by us then outstanding. This proposal will be considered by the Transvaal Coal Trust shareholders at a general meeting in Johannesburg on June 23rd next. So far as we can judge, the scheme seems to be well received by the shareholders. There has been no serious criticism, and the source and reason of such little opposition as we see are well known to us as an exhibition of brotherly love not without precedent in South African finance. (Laughter.) In the directors' report you will find reference to the new business we have entered upon, in combination with certain friends, for the reorganisation of the Daggafontein Gold Mining Co., Ltd. The success of the developments of the Brakpan, Springs and other properties in the Far Eastern Rand has made it possible to interest capital in the Daggafontein area. This property has one shaft sunk to the reef and several drill holes put down in former years, which also cut the reef. Except in the shaft, the indications obtained from this testing work pointed to the conclusion of the reef being on the average a narrow one, but with sufficient

promise of gold values to justify, in these times of confidence in the district, a considerable expenditure in development. The shaft shows good values and a greater thickness of reef than the drill holes would promise. Moreover, the fact of this shaft being already sunk greatly facilitates and cheapens the first steps in actual mining, while certain experience of the past as to drill-hole results generally—and borne out by the results at the shaft—allow of a reasonable hope that the actual average width of the reef when opened may be found greater than indicated by the drilling. The conditions generally, therefore, seemed to justify the raising of a working capital of £300,000 as a first step in the financing of the new Daggafontein Mines, Ltd. As applying to this particular mining risk, I shall have a few words to say later when speaking of the prospects in general of the district. Work is now proceeding on the property.

OUTSIDE INTERESTS.

Outside of South Africa we have done occasional business during the year, and on the whole have made some profits by our operations, while still holding certain interests of importance for the future. The mine of the Burma Corporation, in which we are interested, is one of the great deposits of the world of lead, zinc and silver ore. It has developed remarkably well during 1915, and although the profit it is making from lead and silver alone is being absorbed at present in the equipment of the property, the future position of the corporation seems to be assured from the 2,500,000 tons of high-grade ore already proved in reserve. We do not expect to realise any benefit from our interest in the Itabira Iron Mine of Brazil for some time to come, but simply look on it as an asset which the assumed world's future demand for masses of high-grade iron ore should some day make valuable. Our interests in America are small, and we have none worth mentioning in Mexico. We have some Russian interests, but they do not call for any special comment at this time. From this summary of our principal holdings and operations you will see that in substance our future, like our past, rests on South African mining, and I should, therefore, like to say a few words of general character on this field of our investments. The success which has attended the development of Brakpan and Springs after some years of patient waiting—including a few periods of doubt and discouragement, during which the Eastern Rand was not highly thought of either by engineers or financiers—has been accompanied of late by the very successful opening of other properties in the neighbourhood. The effect is seen in the marked interest now shown in the working properties and in the financing of new efforts like the Daggafontein. This is quite in accord with the history of the Rand for many years, and this recurrence of success and confidence after periods of disappointment and doubt should be kept in mind, because these alternations result from the nature of the distribution of the profitable ore bodies.

PRODUCTIVENESS OF THE RAND.

I have on more than one occasion explained at our annual meetings the reasons for our faith in the average productiveness of the Rand, and that, too, at times when things were not so favourable for us as they are at present. Therefore, you will not misunderstand me when I mention a few facts useful to keep in mind, when confidence may develop into rash expectations. Mining engineers are not in agreement as to how the gold got into the Rand blanket: for it is a unique occurrence, both in character and extent. Even if there were perfect unanimity as to the method by which the gold entered

into present reefs, which were originally flat beds of pebbles and gravel, the engineers would be no nearer to being able to prophesy what any given undeveloped area of reef will yield in the way of percentage of profitable ore. The reefs are wonderfully persistent, but they vary greatly in thickness, both in length and in depth; while the proportion of gold follows no established law in relation to any of the varying elements of situation, dip, reef thickness, or dyke or fault occurrences. From this it follows that each new area attacked by development in the Far Eastern Rand has its own speculative uncertainty, while none of the unworked ground can be made to pay dividends except after very heavy expenditure of capital and the lapse of a very long time. The Brakpan mine has shown great variations in the value of different portions of the ground opened, and it will doubtless continue to show similar variety in the area still to be developed, both in value and thickness of reef. The Springs mine has been very fortunate so far, but its development has been mostly within a limited favourable area; so that some periods of less satisfactory exploration may reasonably be expected hereafter. In both mines, however, such a large tonnage of ore reserve has been exposed that temporary fluctuations need not disturb us, because this assured tonnage may be said to fulfil, in a financial way, the mechanical function of a weighty fly-wheel in equalising motion. It is quite likely, from various indications, that some of the unopened areas in the district will show comparatively thin reefs, which would yield better commercial results by milling a relatively small tonnage per claim of rich ore, rather than by aiming at reduced costs of working by a large capacity.

APPRECIATION OF STAFF'S SERVICES.

We have reason to thank our general manager, consulting engineer, and staff in South Africa for good and successful work during the year, and with them to associate the managers of our subsidiary companies, to which another is now added. Our London staff has been much reduced by the absence of those who have gone on military service, and, in consequence, those who have had to remain with us have been worked very hard. Our two managing directors have been most energetic, resourceful and successful in working up new business and watching old interests; this, too, at a time when it might have been anticipated that the conditions prevailing precluded all enterprise. I will now ask that the resolution I have read be seconded; but before putting it to the meeting I will answer, if possible, any questions which may be asked.

Mr. R. J. Frecheville seconded the motion, which was carried unanimously without discussion.

The Chairman next moved: "That a dividend of 15 per cent. (1s. 6d. per share), less tax, be, and the same is hereby, declared payable to all shareholders registered on February 25th, 1916 that the sum of £10,000 be placed to reserve account, and that the balance of £12,145 16s. 1d. be carried forward to next account."

Mr. B. Kitzinger seconded the motion, which was unanimously agreed to.

Mr. Kitzinger then announced the re-election of the retiring directors (Messrs. R. J. Frecheville and Louis Oppenheimer), which was seconded by Mr. Taunton and carried unanimously.

On the motion of Mr. Elmore, seconded by Mr. F. Jones, the auditors (Messrs. Deloitte, Plender, Griffiths and Co.) were unanimously reappointed, and an extraordinary resolution altering the articles

of association, in the terms as set out in the notice, was also unanimously agreed to.

Mr. Bedford McNeil proposed a hearty vote of thanks to the chairman and the directors for the successful manner in which they had conducted the affairs of the company during the past year.

Dr. Brown Clarke seconded the vote, which was unanimously recorded, and, the Chairman having briefly acknowledged the compliment, the proceedings terminated.

STANDARD BANK OF SOUTH AFRICA.

THE OUTLOOK.

The 103rd ordinary meeting of the Standard Bank of South Africa, Ltd., was held on April 26th, at the Cannon Street Hotel.

Mr. W. R. Arbuthnot, who presided and moved the adoption of the report, said that the effect of the war on trade and finance had been great, and the fact that the trade of the Empire had been able to be carried on at all was due to the preparedness of our magnificent Navy at the outset, and its protection of our trade routes, its resourcefulness in meeting the submarine and other activities of our enemies, and its tireless watchfulness in the North Sea. In spite of the trying times they were going through it had been possible for the bank to maintain the rate of dividend unimpaired at 14 per cent. for the year. During the period under review the campaign in German South-West Africa had been brought to a satisfactory conclusion, and that territory was now known as the Protectorate of South-West Africa. The credit for the ability and energy with which the campaign had been conducted, and the rapidity with which it had been brought to a successful close, in spite of serious difficulties, belonged entirely to South African troops, no other troops having taken part in the operations while the supreme command was in the hands of General Botha, who thus proved himself no less able as a commander in the field than as a statesman in the Council Chamber. Since the completion of the conquest of German South-West Africa a fresh African campaign had been entered upon, and the troops employed were again largely from South Africa. Their leader was again a great South African statesman and soldier, and the Empire looked forward with confidence to the energetic prosecution of the campaign by General Smuts and to the establishment, as soon as all enemy opposition had been overcome, of another Protectorate in that region. New branches had been opened at Windhuk, Swakopmund and Luderitzbucht in the South West Africa Protectorate, and the general manager in South Africa was fully aware of the Board's wishes regarding the extension of the bank's branch system as the development of any district warranted it.

BALANCE-SHEET ITEMS.

It would be seen by the balance-sheet that notes in circulation had increased by £163,000, and now stood at £1,234,896.

a very satisfactory increase. The total of deposit, current and other accounts showed an increase of £2,773,428. This was partly due to decreased trade, and to the fact that large sums of money had been spent by the Government in South Africa in connection with the war, thus enabling traders to dispose of their stocks of imported articles, and as these, in many cases, had not been replaced, traders were in the position of having cash instead of goods in their hands. The total cash stood at £7,123,833, showing an increase of £181,000. Of this total over £4,600,000 was represented by actual cash in hand. At a time when money could be so profitably employed at short notice it might seem unfortunate that so large a sum should be earning no direct return, but the nature of their business and the large number of their branches made these large holdings of coin absolutely essential. The increase in them was necessitated by the rise in deposits and notes in circulation. The item of investments stood at a figure exceeding by £1,387,000 that in last year's balance-sheet, and this was due principally to purchases of War Loan. There was an increase of over £1,000,000 in bills of exchange, which was satisfactory and reflected the revival which took place in trade towards the end of the year. The bank's gross profits during the year were £932,316, or an increase of £7,000 odd on the previous year's profits. The sum of £71,000 had been provided for writing down the investments to their market value on the 31st December last, and this without touching our reserve fund. In order to do this they had had to reduce by £13,465 the amount carried forward. Last year the carry forward was increased by £43,348, and it was pointed out that this would provide for possible future requirements. Owing to the withdrawal of minimum prices since 31st December a fall had taken place in some of their securities, for which provision would in all probability have to be made when they dealt with the bank's operations for 1916. What would happen after that would, of course, depend on the duration of the war and the rate of interest at which the British Government would have to borrow to provide for the cost of carrying it on. The directors recommend the appropriation of £20,000, as usual, to officers' pension fund and the payment of a final dividend of 7s. per share, making 14 per cent. for the year, and leaving £87,032 to be carried forward.

GENERAL SITUATION IN SOUTH AFRICA.

Perhaps the most outstanding features of the present situation in South Africa were the easy financial position and the comparative smoothness of business notwithstanding the war, for, though restricted in volume by reduced shipping facilities and high freights, business had proceeded with little interference. The imports during the twelve months amounted to nearly 35 millions in value, showing a decrease of under three millions as compared with 1914, but nearly 10 millions when compared with 1913. The exports appeared to show a heavy reduction,

the figures being under 17 millions for 1915, against nearly 42 millions for 1914 and 69 millions for 1913, but it must be remembered that no figures were published in respect of 1913 for native gold exports. The export of diamonds in 1915 amounted in value to only £1,616,000, against 3½ millions in 1914 and 42 millions in 1913. If they deducted the export of native gold and diamonds from 1915 and 1914, they arrived at a total value of 16½ millions exported in 1915 and 13½ millions in 1914, and a corresponding export in 1915 of £15,200,000, so that the decrease, except as regards diamonds, was apparent rather than real. The gold mining industry had continued working at full capacity and there had been a substantial increase in the production, which represented 40 per cent. of the world's output. The amount of gold produced in 1915 was really a record, for though the 1912 figure appeared larger, it was really swollen by the inclusion of a large amount of reserve gold. The downward trend of working costs had been arrested by the increase of wages necessitated by the higher cost of living and by the increased cost of working supplies and stores. In Rhodesia the industry had made substantial progress. The output of coal, which contracted considerably after the outbreak of war, showed a marked revival in the latter half of 1915, and had it not been for the scarcity and high cost of sea freight, there would probably have been considerable expansion in exports. The diversion of shipping from the Suez Canal route was having the effect of benefiting the bunkering trade and raising prices. Farming had experienced a severe set-back in the Cape Province, more especially in the Midlands and South-West, where an unusually serious drought had occurred. The losses of stock had been very heavy and would take some time to make good. The effects would have been still more widespread had it not been for the extension of lucerne cultivation in recent years. Fairly general rains had now fallen and had afforded some relief. It should be remembered that the country possessed wonderful powers of recuperation, and that a succession of even moderate seasons would soon make up for the ravages of the drought. Farming conditions in other provinces and in Rhodesia and the East African Protectorate had been favourable. In Rhodesia particularly there had been a steady increase in the stocks of cattle, and efforts were being made to establish an export trade. Having referred in detail to the progress and prospects of various other industries, the Chairman mentioned with deep regret the death of Mr. J. D. D. Mackay, the assistant general manager at Capetown, stating that the vacancy had been filled by the appointment of Mr. Noel Jennings (London manager), who had been succeeded by Mr. Francis Shipton, for twelve years the able secretary of the bank, this position now being held by Mr. John Jeffrey. In conclusion, he alluded to the loss sustained by the death of Lord Welby, and stated that Mr. H. L. M. Tritton had been selected as his successor.

The motion was seconded by Mr. J. F. Finlay, and carried unanimously.

New Kleinfontein Quarterly Report.

The report of the directors of the New Kleinfontein Co. for the quarter ended 31st March, 1916, shows that the total working costs were £143,668 2s. 3d., or 18s. 6-310d. per ton milled; net working profit carried down, £39,130 11s., or 7s. 7-312d. per ton milled; a total revenue of £202,807 13s. 3d., or £1 6s. 1-822d. No allowance has been made in this statement for interest amounting to £2,736 19s. 1d.; pumping and maintenance of the Apex section, £3,365 19s. 6d.; nor for the Government Profits Tax and Special War Tax. Ore Reserves.—The payable ore reserves at the end of the quarter on a mining basis were as follows:—2,901,979 tons; value

5-53 dwts. The breaking of a coupling in the mill line shaft necessitated 30 stamps being hung up for a part of the month of February, resulting in a reduction of the tonnage milled. The development figures given above are those for the quarter ended 31st December, 1915, corrected by boxhole values since obtained. In future the development values given in the quarterly report will be those for the preceding quarter corrected in this manner. Owing to the large area covered by the workings in the western section the ore revealed by these workings has not been fully developed and, therefore, no tonnage from this section is included in the ore developed for the quarter.

New Patents.

7. Margarethe Lesser.—An improved concentrator for tin and other ores.
8. Smithsend Phelps.—Improvements in rock drills.
9. Smithsend Phelps.—Improvements in rock drills.
10. Walter Edward Kimber.—Improvements in hammer rock drills.
11. Clement Camu Derrett.—Ear brand for stock.
12. Gogu Constantinesco and Walter Haddon.—A method and means for transmitting power by wave transmission through liquids.
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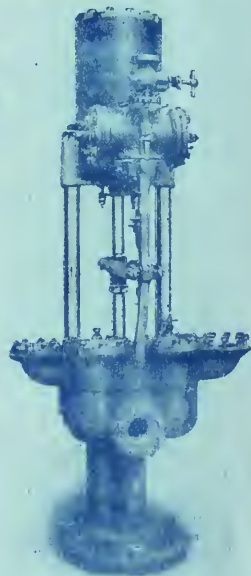
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